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J. A. THOMSON, M.A., D.Sc., F.G.S., DIRECTOR.

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BULLETIN No. 5.

MAORI STOREHOUSES AND KINDRED STRUCTURES.

HOUSES, PLATFORMS, RACKS, AND PITS USED FOR STORING FOOD, ETC.

BY ELSDON BEST.

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PREFACE.

THE present work was commenced by Mr. Elsdon Best under the directorship of the late Mr. A. Hamilton, who had intended himself to write a section on Maori carving. This was, unfortunately, never completed, owing to his regrettable death, and it has fallen to Mr. Best to write this part also. The whole of the illustrations have been arranged by Mr. J. McDonald, some of them being copies of old prints, others diagrams from his own pen and brush, while the majority of the original photographs are also his work, but some are taken from old photographs by Mr. Hamilton. Unfortunately, the originals of this last group are unknown, and the source cannot be here acknowledged.

This Bulletin is the fifth of the series, but is the second in which some division of Maori technology has been treated exhaustively, the first of these being Bulletin No. 4, on the Stone Implements of the Maori. It may be of interest to describe the methods adopted in securing the information which is being worked up in this series. In the first place all the writings of those in contact with the old-time Maori have been abstracted, and the matter thus acquired has been classified under headings arranged by Mr. Hamilton as follows:—

Implements.
Houses.
Maori Pa.
Canoes.
Clothing and Ornaments.
Woodcraft.
Amusements.

To this has been added the information acquired personally by Mr. Best during many years' residence and intercourse with the least modernized Maori tribes. In working up this material and the actual specimens themselves Mr. Best has further obtained much information by correspondence with Maori scholars in all parts of the Dominion, and has further framed a large number of questions which are put to the few remaining old men of the Maori race who have preserved the old lore, whenever opportunity offers.

In spite of the efforts made to exhaust the subject, it has already been found that the publication of such a monograph as that on the stone implements only serves to open up fresh sources of information, and it will be necessary in the future to publish supplementary papers in some suitable form.

J. ALLAN THOMSON.

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LIST OF AUTHORITIES AND WORKS QUOTED.

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COOTE, W.—Author of "Wanderings South and East," 1882.

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GUDGEON, COLONEL W. E.—Author of many papers on Maori subjects in "Monthly Review," "Journal of the Polynesian Society," &c.

HAMMOND, REV. T. G.—Author of several papers on Maori subjects in "Journal of the Polynesian Society," &c.

HARE HONGI.—Author of various papers on Maori matters in the "Journal of the Polynesian Society," &c.

HEAPHY, MAJOR.—Author of a paper on Early Wellington, published in Vol. xii, "Transactions of the New Zealand Institute," and other items.

HIKO, TE.—An intelligent chief of the Ngati-Toa clan, of Pori-rua.

JAMESON, R. G.—Author of "New Zealand and Australia," 1842.

"MAORI ART."—Published by the New Zealand Institute.

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MCDONNELL, COLONEL.—Author of "A Native Account of the Pakeha-Maori Wars," 1887.

NICHOLAS, J. L.—Author of "Narrative of a Voyage to New Zealand in 1814," 2 vols., 1817.

POLACK, J. S.—Author of "Travels and Adventures in New Zealand," 2 vols., 1838, and "Manners and Customs of the New-Zealanders," 2 vols., 1840.

POWER, W. T.—Author of "Sketches in New Zealand," 1849.

SAVAGE, DR.—Author of "Some Account of New Zealand," 1807.

SELWYN, BISHOP.—See "Journal of the Bishop of New Zealand's Visitation through his Diocese," 1849.

SHORTLAND, E.—Author of "Maori Religion and Mythology," "The Southern Districts of New Zealand," and "Traditions of the New-Zealanders."

SKINNER, W. H.—Writer of an interesting description of an old-time Maori *pa*, or fortified village. (See "Journal of the Polynesian Society," Vol. xx). Also donated information verbally.

SMITH, S. PERCY.—Author of "The Peopling of the North," "Hawaiki," &c.

STACK, CANON.—Author of "Kaiapohia" and "The South Island Maoris"; also papers on Maori subjects in "Transactions of the New Zealand Institute."

STOWELL, H. M.—The European name of Hare Hongi; a gifted contributor to our Bulletins.

TAYLOR, REV. R.—Author of "Te Ika a Maui," 2nd ed., 1870; also "New Zealand Past, Present, and Future," 1865.

THOMSON, DR.—Author of "The Story of New Zealand," 2 vols., 1859.

TREGEAR, E.—Author of "The Maori Polynesian Comparative Dictionary" and other works.

TUTA NIHONIHO.—A late chief of the Ngati-Porou Tribe, formerly an officer in the Native Contingent. An enthusiastic collector and contributor.

WADE, W. R.—Author of "A Journey in New Zealand," 1842.

WAKEFIELD, E. J.—Author of "Adventures in New Zealand," 2 vols., 1845.

WALSH, ARCHDEACON.—Author of a paper "On the Cultivation and Treatment of the *Kumara*," in Vol. xxxv of "Transactions of the New Zealand Institute."

WHATAHORO.—A native contributor of much interesting matter on Maori customs, &c.

WHITE, JOHN.—Author of "The Ancient History of the Maori," in 6 vols.; also of some interesting lectures on Maori customs, &c., published with Gudgeon's "History and Doings of the Maoris," 1885.

WILLIAMS'S MAORI DICTIONARY.—A very carefully compiled and reliable work.

YATE, REV. W.—Author of "An Account of New Zealand," 1835.

NATIVE TERMS NOT FULLY EXPLAINED IN THE TEXT.

Aka: Generic term applied to stems of climbing-plants.

Aka-tokai, aka-kuku, aka-tororaro: Three species of climbing-plants having pliant, tough stems, used for binding purposes.

Atua: Spirit; demon; any object of superstitious regard.

Kumara (Ipomoea batatas): Sweet-potato. The principal cultivated food product of the Maori in former times.

Maihi: The facing-boards of a house-gable (barge-boards).

Manaia: Name of a pattern of carving; a weird and grotesque figure of the unicorn type. The origin of this conventionalized figure is said to be a denizen of the ocean.

Manuka (Leptospermum scoparium): Bark much used for roofing huts, &c.

Marae: The plaza or open space in a native village, or open space before a house.

Pa: A fortified village.

Pae kai awha, or *paepae kai awha:* The outer threshold of a house; the plank across the front of the porch.

Parata: Carved wooden head placed over joint of barge-boards on a native house.

Pataka whakairo: An elevated storehouse adorned externally with carvings.

Patu: Short weapons wielded in one hand, made of stone or bone, occasionally of wood.

Poupou: The vertical slab-like posts of the walls of a native house.

Puhi: This term was applied to a girl or young woman of rank chosen by a clan as a combined pet and chieftainess, and who was carefully nurtured, protected, and respected, nor allowed the usual intercourse with young men, her marriage being a tribal arrangement.

Punanga; whare punanga: Huts erected among the branches of trees, and used as hiding-places by non-combatants in time of war.

Rua: Hole; pit; cave. Herein used with various qualifying terms as denoting various kinds of pit stores.

Tamawahinetia: Denotes the performance of a curious ceremony whereby the *tapu* was taken off any object.

Tapurangi: A term applied by some tribes to a low platform erected on the village plaza, and used as a seat or lounging-place.

Taro (Colocasia antiquorum): Formerly cultivated by the Maori.

Tautiaki: The slab-like posts supporting the lower ends of barge-boards of a Maori house. Also termed *amo maihi*.

Tekoteko: Carved wooden figure in human form on gable of a house or *pataka*. Sometimes both *parata* and *tekoteko* so used, in which case the latter is placed above the *parata*.

Toenga kai: Remains of food after a meal. Such remains from the meals of a *tapu* person had to be very carefully dealt with.

Totara (Podocarpus totara): Bark used for roofing purposes and in many other ways.

MUSEUM BULLETIN No. 5.

MAORI STOREHOUSES AND KINDRED STRUCTURES.

INTRODUCTORY REMARKS.

In the description of Maori usages in the matter of the storage of food-supplies which is given in the following pages, a method similar to that employed in the compilation of Bulletin No. 4 has been adopted—viz., the many scattered observations made by early voyagers and travellers have been brought together, and have been supplemented by such new matter as could be collected from natives and others.

The personal examination of interesting systems of cave and pit storage-places, as seen in or near some of the old fortified places of the Maori, impresses the observer with a sense of the great care displayed by the natives in former times in the preservation of food-supplies.

It is held that a description of items pertaining to Maori technology will tend to throw light upon many phases of the social life and customs of the natives, a subject that we hope to deal with in the future.

The construction of the elaborately adorned elevated storehouses is now becoming a thing of the past, hence it has been deemed advisable to place on record illustrations of the highly curious and interesting carved designs employed in such adornment, as also some description of other storage-places.

The various objects to be described under this heading may be classified as follows:—

I. Raised storehouses, termed *pataka*, *whata*, &c., supported on one, four, or more posts.

II. Storehouses resembling ordinary huts.

III. Platforms and stages elevated on posts or trees, but not supporting any house, and also racks.

IV. Semi-subterranean stores—pits and caves used as storage-places for food.

The first of these series is by far the most important, from the native and European point of view, as it includes the carefully constructed and elaborately carved structures with which most of us are familiar, and which often displayed evidence of the highest form of artistic skill attained by the wood-carvers of Maoriland.

The second series includes the communal storehouses found in some native hamlets in former times, as well as others of a more private nature.

The third series embraces many different forms of elevated platforms, and also racks, used as storage-places for food.

The fourth division includes the various forms of pits and semi-subterranean storage-places that were so largely used by the Maori of former times.

Doorway of a Pataka.

I. RAISED STOREHOUSES (*PATAKA*, *WHATA*, ETC.).

The two native terms *pataka* and *whata* appear to be used in a somewhat loose manner, and are both applied to the elevated storehouse and the simple platform, stage, or scaffold with no erection thereon. This is somewhat confusing. The generic term for pits is *rua*, these food-storage pits being known in full as *rua kai* (food-pits), or by such terms as *rua kumara* (sweet-potato pit or store) and *rua taewa* (potato-store).

To judge from information obtained from various sources, the term *pataka* could not rightly be applied to an open platform—*i.e.*, uncovered and without walls—as it implies something "enclosed."

The term *whata*, however, simply means "to elevate, to support, or elevate on supports," hence it would appear that this term might be applied to both *pataka* and open platforms.

Polack terms the raised storehouses or *pataka*, *pouaka* (*pouwaka*), about which name there is some doubt. *Pouaka* is a genuine Maori word, but we need corroboration as to its application as above given. Polack's knowledge of the native tongue was not extensive. We have seen the word *pouaka* used as a name for the *waka*, or trough used in snaring birds; but this also needs corroboration. *Pouwaka* (not *pouaka*): Properly speaking, says Mr. Stowell, this name, among Nga-Puhi, applies only to little carved boxes, or diminutive *pataka*, in which bones of the dead were placed and kept. They were about 30 in. long, and adorned with carved slabs, being placed on the top of a single post about 14 ft. from the ground. They were termed *pouwaka whakairo*. Occasionally a *tohunga* would ascend to view the receptacle, to see that the bones had not been interfered with. He ascended by means of a notched beam (*ara-whata*), which would be taken away again, not left there. A word of somewhat similar form is *pouraka*, which denotes (1) a platform erected on one supporting-post; (2) a box-like receptacle for a dead body, which was also placed on a post, according to Williams.

John White applies the names *whata*, *timanga*, and *komanga* to the *pataka*, or raised storehouse. He remarks that such places are built on two plates hollowed out on one side, the hollow side being downwards when the beams are put in position on the supporting-posts. This was to prevent rats passing up into the storehouse.

The fine carved storehouses raised on posts were termed *whata papaka* on the east coast. The carvings thereof were of the *koruru* and *karearea* type.

Williams's Maori Dictionary gives: "*Pataka*, storehouses raised upon posts, elevated stage for storing food; (2) enclosure." "*Whata*, elevated stage for

storing food." Also, "*Whatārangi*, stage or platform elevated on two or more posts." This latter word might be given as *whata a rangi*.

We hear the term *whata* applied to platforms, stages, scaffolds, racks, and elevated storehouses. On the other hand, in a letter written by a Wai-rarapa native in 1857, the term *pataka* is applied to a rude scaffold erected for use in felling a tree; also, the word is used as a verb: "*Ka patakatia e au kia tae ki te wahi iti o te rakau*" (I constructed a *pataka* against the tree to enable me to reach the smaller part of the trunk). It would thus appear that both these terms, *pataka* and *whata*, are used by natives in a wide sense, as embracing both elevated houses and elevated platforms and stages, including rude scaffolds. This leaves us lacking in specific native terms for these two types of storage-places. The term *whata*, however, we can follow northward into the many-isled sea, and see that the ancestors of the Maori knew it as a name for a stage or platform, &c., ere they migrated to New Zealand: Tahitian, *fata*, an altar, a scaffold; Samoan, *fata*, a raised storehouse, a shelf, &c.; Tongan, *fata*, a loft, &c.; Mangaian, *ata*, a shelf; Futuna, *fata*, a stage; Paumotan, *afata*, a box; while Moriori gives *whata*, a raft.

In his account of Te Reinga, Mr. Percy Smith states that a northern native, of the Au-pouri Tribe, informed him that in the north the doors of the *kumara* stores were always turned to the north, for fear the spirits travelling from the south should enter and thereby *tapu* the *kumara*, and so render them unfit for food. This idea does not seem to have obtained elsewhere.

It was customary to build *pataka* so that they faced the sun—that is, faced some point between east and north, north-east or east by north being the usual aspect. The only object was to secure a warm aspect. To face due north would be too far round, and there seems to have been also a feeling that to face the house in that direction would be a *takahi i te rerenga wairua*—that is, an interference with the departing-place of the spirits of the dead, which is situated at the northern extremity of the island. If a *pataka* was so faced, one might remark, "*Katahi ki to pataka. Kei te rerenga wairua tonu te waha.*" In many districts *pataka* were not necessarily north and south.

The two supporting-posts in the front of a *pataka* are termed *pou aronui*, but there are no specific names for the other posts, or for *pataka* having six or more supports. Across the tops of these posts were placed the plates or joists on which the flooring rested, and which were known as *huapae*.* In some cases these were plates so fashioned as to be wide on top and much narrower on the lower sides, so as to baffle rats. In other cases they were hollowed out like a long trough, save that the hollow continued to the very ends, as in a piece of spouting. These were placed hollow downwards on the

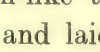
* This description of a *pataka* was given verbally by Te Whatahoro, of Wai-rarapa, in 1913.

top of the posts, in order to prevent rats passing up into the store. Pieces of old canoes were sometimes used for this purpose. In some cases plates were *pakatitia*, or slotted, so as to fit on the post-heads. The flooring-slabs, termed *papa takatakahi*, were then laid across on the *huapae*, or plates. On the top of these floor-slabs, along either side of the *pataka*, running fore and aft and a little distance in from the edges of the floor, was laid a pole, or worked timber, against which the bottom of the planks to form the walls were placed. These poles were lashed to the plates with *aka*, or some other material, which encircled the plate and pole, being thrust through narrow spaces between the floor-planks. The planks to form the walls were then placed upright outside the lashed pole, and lashed thereto by means of a cord or *aka* passed through holes bored in the planks. These holes were bored with a cord-drilling apparatus, having a stone point. A hewn plank was then placed horizontally along the upper parts of the planks of the wall, and on the inside, and lashed to those planks, which had holes bored through them for the purpose, with the tough and pliant *aka kai* (*kaaii*). This horizontal plank is the wall-plate of the *pataka*. No ridge-pole was erected, but the rafters were set up in pairs, crossed like X at the top, and lashed in many cases, but sometimes fashioned to butt together, and the lower ends projecting considerably over the side walls. On the top of the rafters, just above the wall-plate, a strong batten was lashed firmly, in a horizontal position, to the wall at both ends and to each separate rafter. A pole was then placed along the top of the rafters, lashed to the apex of each pair, this supplying the place of a ridge-pole. The intermediate battens to support the thatch were then lashed on to the rafters. The end walls were built in a similar manner to the side walls. In some cases bark was used instead of thatch on the roof; and in some *pataka* two poles were placed on the floor to receive the lower ends of the planks forming the walls, such planks being inserted into the narrow space between the two parallel poles. In these cases no lashing was employed on the lower ends of the wall-plank.

It should here be observed that the above-described mode of erecting a *pataka*, or elevated storehouse, in which no true ridge-pole was employed, would not be adopted in the case of a superior store, such as were embellished with carvings—that is, the more permanent type.

The doorways of these *pataka* were small in size, and fitted with a plank door that slid to one side, as the door of a dwelling-hut does. In some cases the *kaurori* method was employed, a similar one to that seen in our own bush camps. A piece of timber at one side of the door projected above the top and below the bottom of the door, these projections fitting into holes in plates above and below the door; thus the door swung as if on hinges. We have always looked upon this mode as having been borrowed from Europeans, but Te Whatahoro seems to think that it was pre-European.

The little porch or veranda at the front end of these *pataka*, formed by the prolonging of the walls and roof, is often used as a place to deposit odd articles in. This little veranda is termed a *whakamahau*.

Instead of the trough-like timbers, the plates were sometimes hewn timbers shaped like this  , and laid on the tops of the supporting-posts.

When European manufactures became plentiful it was no uncommon sight to see tin milk-pans, or other tin dishes, placed on the top of the supporting-posts of these elevated storehouses upside down, and on top of which the foundation plates or beams of the building were laid. These were most effectual in preventing the passage of rats into the store.

So useful are these raised storehouses that many of our bush settlers built such places in which to keep any goods destroyable by rats. The modern method of preventing rats passing up the posts is to nail pieces of tin round them, for which purpose preserved-food tins are often used.

The superior class of *pataka*, such as those ornamented with carved slabs, &c., were not used as storehouses for crops—*kumara* and *taro*—but as *pataka taonga*, or storage-places for general objects. All kinds of things—boxes containing ornaments or prized garments, also weapons, implements, fine mats and baskets, &c.—were stored in *pataka whakairo* or ornamented storehouses; as also such articles of food as preserved birds, rats, &c., in calabashes or wooden vessels; *kao kumara* (dried sweet-potatoes), dried fish, &c. *Kumara* were never stored in a *pataka taonga*, but only in pits, caves, ordinary stores, or occasionally in common *pataka*.

The superior type of *pataka*—those ornamented with carving or red paint—were given special names, but common rough ones were not. The little *whata rangi*, described elsewhere, were sometimes named, as also in some cases were *whare punanga* erected in tree-tops. Each hamlet, however small, had at least one *pataka* and one *whata* or platform.

Some *pataka* had only the *pae kai awha* carved, and some had the *pae kai awha* and *maihi* carved.

Of the *pataka* of the Taranaki district, Mr. W. H. Skinner says, "There were storehouses built on piles, sometimes on tree-trunks 20 ft. in the air, frequently very handsomely carved and painted red with *kokowai*, or oxide of iron. In these were stored arms, utensils, fishing-nets, and other property. . . . The *ariki*, or head chief, . . . was very *tapu*, as was all belonging to him. He had a small *pataka* erected near his house called a *pu*, in which were kept preserved birds, human flesh, &c., only to be eaten by him. This kind of storehouse had only one post, on which it was stuck like our pigeon-houses. In the same manner all pertaining to the priest was equally sacred. His storehouse was named an *ipu*, but had two supports. . . . There was a particular kind of receptacle called *kawiu*, a *pataka* on a pole, where the *waka* (receptacle) of the god was kept."

Here we note the origin of the terms *purangi* and *ipurangi* as applied to elevated stores. The word *rangi* in this connection seems to mean lofty or elevated, as *pu-rangi*, *ipu-rangi*, and *whata-rangi*.

A rough or temporary sleeping-hut is sometimes termed a *purangi* according to Te Whatahoro, but the term was not applied in former times to such an item. It is also said to be sometimes wrongly applied to a cook-shed, and sometimes to a *pataka*.

Earle, who spent some months in the northern part of New Zealand in 1827, remarks, "Their storehouses are generally placed upon poles, a few feet from the ground, and tabooed or consecrated. Great taste and ingenuity are displayed in carving and ornamenting these depositories. I made drawings from several of them, which were entirely covered with carving; and some good attempts at groups of figures, as large as life, plainly showed the dawning of the art of sculpture amongst them. Many of the attempts of the New-Zealanders in that art are quite as good if not better than various specimens I have seen of the first efforts of the early Egyptians. Painting and sculpture are both arts greatly admired by these rude people. Every house of consequence is ornamented and embellished, and their canoes have the most minute and elaborate workmanship bestowed upon them."

The Rev. W. Wade, who travelled through the Roto-rua district in 1838, speaks of a *pataka* he saw at Ohine-mutu. "In the *pa* a large elaborately carved *pataka*, or *kumara* store, supported on four strong wooden pillars, attracted my attention. The broad boards, which formed the upper angle and most conspicuous part of the veranda of the *pataka*, were curiously wrought, and surmounted at the angular point by a small uncouth figure (*tekoteko*). The inner front and small doorway also abounded in grotesque carvings."

The preceding paragraph to the above is also of interest, hence we quote it: "The high fence of Ohine-mutu exhibited a variety of hideous figures as carved tops to the posts. The larger carvings of the New-Zealanders are of the rudest cast, and often highly indelicate; but their smaller and more finished pieces of workmanship display much ingenuity. Their carved spear-heads and club-handles, their tinder-boxes and boxes for carrying their feathers, the head and stern posts of their canoes, their best paddles, the elaborate work in the front of some of their houses, as well as their efforts in a variety of other ways, both in wood and stone—all show their capabilities."

"Their *kumara* stores are far better built than their most superb houses; and are in general very elaborately carved, having a splendid architrave over the door. These stores, when the *kumara* crop is in them, are all *tapu;* and no persons are allowed to enter them, except those who are *tapu* for the occasion."

It should be here explained that the elaborately ornamented *pataka*, such as the above, were not used as places for storing the *kumara* crop in, as is shown in the contributions of Hare Hongi and Te Whatahoro.

In writing of Taupo, Angas remarks, "The houses here are coloured with bright-red clay from the adjoining hot springs; and many of the store-houses for food are adorned with feathers and grotesque carved work."

Cruise, who visited New Zealand in 1820, describes a *pataka* seen at the Bay of Islands: "The huts of the natives were not very numerous, and the most remarkable among them were the public storehouse or repository of the general stock of *kumara*, or sweet-potatoes, which stood in the centre of the village. Several posts driven into the ground, and floored over with pieces of timber fastened close together, formed a stage about 4 ft. high, upon which the building was erected. The sides and roof were of reeds, so compactly arranged as to be impervious to rain. A sliding doorway, scarcely large enough for a man to creep through, was the only aperture; beyond which the roof projected so far as to form a kind of veranda, which was ornamented with pieces of plank painted red and carved in various grotesque and indecent figures. The carving is a work of much labour and ingenuity; and artists competent to its execution are rare. Wevere(?) pointed out to us the man who was then employed in completing the decorations of his storehouse, and told us that he had brought him from the River Thames, a distance of two hundred miles from the Wai-kare, for that purpose."

Concerning the storehouses in which the sweet-potato crop was stored, Polack, a very early resident, who resided in the Bay of Islands district in the "thirties" of the last century, writes, "*Kumara* houses, expressly built for the storing of the sweet-potato crop, are put together with much care and neatness, of similar materials and workmanship to the superior houses. For such houses the floors are raised, and the lower parts boarded at the sides, to prevent in some degree the incursion of the rats. A veranda is generally carried from the roof entirely round the building, supported by pillars loaded with whimsical sculptures. The doors are often formed like the Egyptian style, contracting towards the top. On the roof a wooden image is generally fixed." In another account he applies the name *pouwaka* to small elevated houses in which were stored arms, garments, utensils, trinkets, &c. They were supported on four carved posts, and embellished with carving and red ochre; in fact, they were the ordinary small *pataka whakairo* used as a storehouse for small miscellaneous items.

Marshall speaks of examining an elaborately carved *pataka*, the four supporting-pillars of which were also "decorated with a variety of grotesque figures."

Colenso says, "Their sweet-potato stores were also often elaborately finished. Sometimes their stores were neatly set on high posts, which were not unfrequently carved, and were climbed up into by means of a notched pole as a ladder."

In Volume v of the "Transactions of the New Zealand Institute" the Rev. R. Taylor mentions some storehouses that he saw in Horo-whenua Lake in the "forties" of last century, and an illustration showing their aspect is given in his work "Te Ika a Maui." Writing in 1872, he says, "It is now nearly thirty years since I first visited Horo-whenua Lake, which, though not of great extent, is still one of much beauty. I was struck with its singular appearance, from a number of *whata*, or native storehouses, being erected on posts in the middle of the lake, and seeing the natives ascend to them from their canoes by means of a notched pole."

FIG. 1.—STOREHOUSES IN HORO-WHENUA LAKE. AFTER THE REV. R. TAYLOR.

The illustration here given (Fig. 1) of these storehouses in the Horo-whenua Lake is based on that in the Rev. R. Taylor's work "Te Ika a Maui." Apparently they were situated near the little promontory at the southern end of the lake. This picture is of interest as the only one we possess of storehouses so situated, for such a situation for a *pataka* was uncommon.

Captain Cruise remarked, in 1820, "The storehouse is always the largest and best building in the village; the one described was about 20 ft. long, 8 ft. wide, and 5 ft. high; it was quite new, and there seemed to have been more pains taken in erecting it than most of those which we had subsequent opportunities of examining."

Wakefield remarks in his "Adventures in New Zealand": "At Otumatua I saw a very beautifully carved *whata*, or storehouse, of which Mr. Heaphy had made a sketch on his visit in 1840, and it was pointed out to me on that account." This was in 1843.

Pourewa, or *atamira:* In former times, says Te Hiko, of Ngati-Toa, these names were applied to a small house supported by one tall post (see Angas), in which high-born children of either sex were sometimes isolated, and wherein they lived. They occasionally descended, and strolled about, but spent most of their time in the elevated hut. Such treatment was accorded only to children who were set aside or selected as being of special importance, and were carefully trained to assume and hold an important position in the tribe. This curious usage would continue until the young person married. In the case of a girl, she was, of course, a *puhi*, and a main object of the above treatment was to prevent her having any connection with the opposite sex.

In Tahitian myths we note that Ta'aroa (Tangaroa), one of the principal gods, had a daughter named Hina, who, in order that her chastity might be preserved, was made *pahio* (*cf.* Maori *pahiko*, a makeshift enclosure), or kept in a kind of enclosure, and constantly attended by her mother. Again, in describing Tahitian marriage customs, Ellis remarks, "They were often betrothed to each other during childhood, and the female thus betrothed was called a *vahine pahio* (*wahine pahiko*). As she grew up, for the preservation of her chastity a small platform of considerable elevation was erected for her abode within the dwelling of her parents. Here she slept and spent the whole of the time she passed within doors. Her parents, or some member of the family, attended her by night and by day, supplied her with every necessary, and accompanied her whenever she left the house. Some of their traditions warrant the inference that this mode of life, in early years, was observed by other females besides those who were betrothed."

It is apparent that this Tahitian institution was connected with the Mangaian *whare motunau*, and that the Maori of New Zealand had some traditional knowledge of the custom.

Whare motunau (an old Mangaian institution): The *whare motunau*, as described by Colonel Gudgeon, was a place where young girls were received and cared for, but only those of good family, until they were of marriageable age, which would not be less than twenty years. When girls were so ready for marriage they were ranged along one wall of a house, and a number of young men of rank were admitted and seated in a row along the other wall. Thus the rows faced each other. The young men then selected each the girl that pleased him, and, if she was agreeable, the twain were, with much ceremony, conducted to the boy's house, and were then looked upon as man and wife.

Dr. Savage, who visited the Bay of Islands in 1805, mentions an extraordinary use made of a *pataka* in the following words: "A short distance from the residence of the chief is an edifice every way similar to a dovecote, standing upon a single post, and not larger than dovecotes usually are. In this Tippeehee (?) confined one of his daughters several years. We understood she had fallen in love with a person of inferior condition, and that these means were adopted to prevent her bringing disgrace upon her family. The space allotted to the lady would neither allow of her standing up or stretching at her length; she had a trough in which her food was deposited as often as was thought necessary during her confinement, and I could not find that she was allowed any other accommodation. . . . The long confinement, with all its inconveniences, produced the desired effect in rendering the princess obedient to the wishes of her royal parent. This barbarous cage, which is ornamented with much grotesque carving, still remains as a memento *in terrorem* to all the young ladies under Tippeehee's government."

Polack makes a curious statement, to the effect that "Houses on posts are also erected for the preservation of food or the honour of young ladies." He mentions a case in which a woman ascended to one of these raised huts, and drew the ladder up after her, in order to escape from an unwelcome suitor. This incident may possibly have been the origin of the latter part of his remark.

Te Whatahoro informs us that occasionally, in former times, a girl might be confined in a *pataka* for some act of disobedience, but that such an occurrence was a rare one. He has only known of one such case during his long life. In this case a girl wanted to marry a man of whom her relatives disapproved, hence she was confined in a *pataka* for one year, an old woman being appointed to watch her and attend her. After a year of this seclusion she became "tame," and was allowed more liberty.

Adornment of the Pataka.

The carved *pataka* seems to have been an object on which the leading chiefs lavished the best and most skilled labour at their command; and whatever might be the position of the ordinary food and store houses in the *marae*, a good position was always selected, in full view of the chief's dwelling, for the prized *pataka whakairo*. Evidence of the magnificence of some of these houses is given at the present time by an examination of the *pataka* and the large carved slabs now in the Auckland Museum, which, though they have suffered from their burial in a cave, give us a vivid idea of what must have been the splendour of the complete work. Nothing so fine is to be seen elsewhere. The intricacy and delicacy of the work is marvellous. Unfortunately, several causes have operated in hindering us from obtaining a statement of the real meaning of the figures represented. The men who were initiated into

such knowledge no doubt carried their secrets to the grave. There is, however, a general similarity in the carvings of all these ornamented *pataka;* not only is the resemblance in one particular district, but from north to south of the North Island. Take, for instance, the *maihi*, or barge-boards as we should call them, and you will find that, notwithstanding a great variety of detail, some of which is shown in the illustration given herewith, there is a similar motive. This motive has been explained as representing the hauling of a whale, or *pakake* (possibly a marine monster, not a whale), up to the figure representing possibly the owner at the apex of the gable. The figures overlying the body of the animal are in most cases supposed to represent those assisting in the hauling-in of the whale, and are generally attended by the personal *atua* of their chief, which is represented by the *manaia*-like figure between the human one to whom it is giving energy. The large scroll with the partial scroll behind

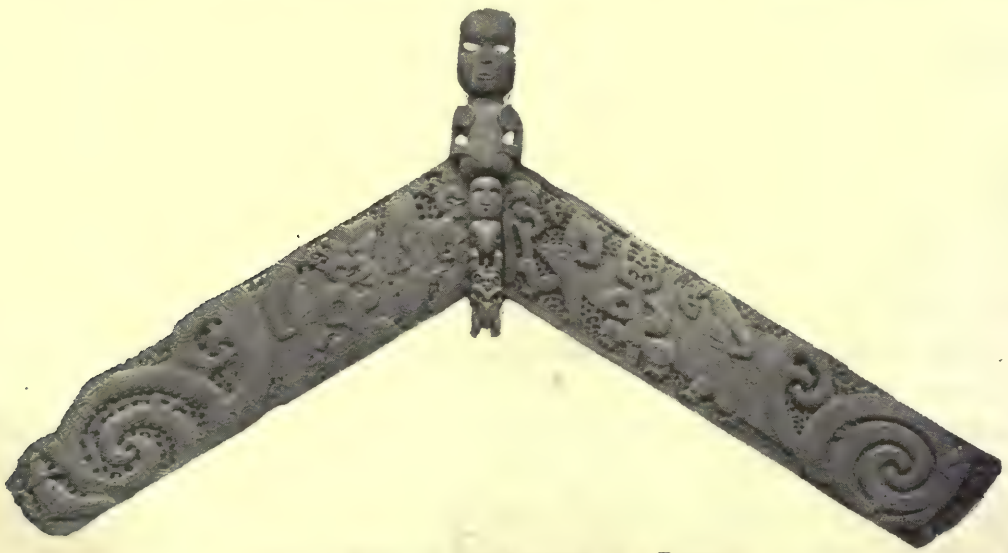


Fig. 2.—Maihi or Barge-boards of a Pataka.

it in some way is supposed to represent the head of the whale. These figures are almost universal, with very few exceptions. Sometimes, however, the number of assistants helping to drag the whale were fewer or greater.

The next important piece of carving is the *paepae*, or long carved boards passing horizontally across the front. Here again generally the motive is human or semi-human figures symmetrically arranged with the attendant *manaia* or assisting *atua*. In the centre, of course, the figure has one on each side, and in this form resembles many of the old groups seen in sacred representations of older countries, as those, for instance, in which the central figure, human, is attended by good and evil spirits. The central wall, which is usually some little distance back from the front, forms the *mahau*, or veranda, which in its original condition appears to consist of a central slab on which a figure is represented (probably the owner of the *pa*, or a distinguished ancestor)

and superposed figures, which vary very much. The joints of these slabs are covered with the usual battens and feathers. As previously mentioned, the sides consist of one large plank, fixed horizontally, and carved with a series of male and female figures, attended by the *manaia* or *atua*. Illustrations are given of the general variants which have been noticed. A great many photographs of *pataka* are quite misleading in this respect, as specimens have been made up for sale by dealers and others from fragments of house-carvings and cut-up fragments of old *pataka*, put together without any reference to their original position. This makes the study of the ornamentation extremely difficult to those who have not sufficient experience to point out the discrepancies. It is true that the Maoris themselves, within the last fifty years, have been equally guilty, and rather than take the trouble of making a fresh carving they have cut and made available old work—probably for its associations, or to save themselves trouble. Many museums possess fronts of *pataka* which are made up of various portions of *pataka* slabs of all shapes and sizes.

FIG. 3.

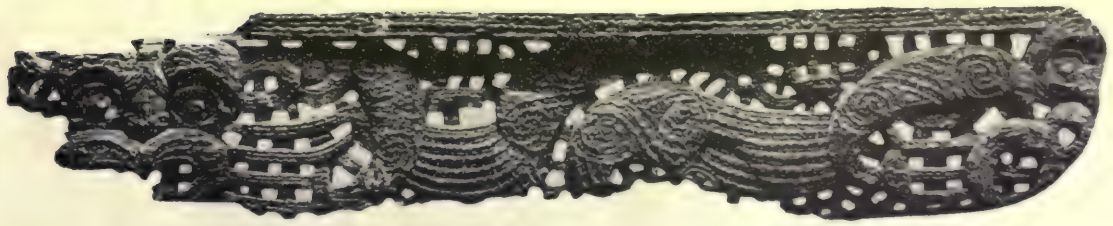


FIG. 4.

PAEPAE, OR PAE-KAI-AWHA: OUTER THRESHOLDS OF ELEVATED STOREHOUSES.

The two preceding paragraphs were written by the late Director of the Dominion Museum. The remark concerning the personal *atua* (god) represented by a *manaia*-like figure between (?) the human one evidently applies to some illustration that has been mislaid. The side-walls of these *pataka* did not always consist of a single wide slab fixed horizontally.

The distorted human figure with two flanking *manaia* is shown more clearly in Fig. 5, in which also the intermediate details are plainly seen. The Maori has a dim idea that the origin of the *manaia* design was some denizen of the ocean.

FIG. 5.—THE DOUBLE-MANAIA DESIGN, SHOWING DETAIL

Although, in many cases, the central human figure only has a *manaia* facing it on either side, yet we also note this peculiarity carried out throughout the whole length of a carved slab used as a side-wall, or outer threshold, as observed in Fig. 6 showing one of the latter planks.

Fig. 6.—Paepae, or Threshold of a Pataka, Double-manaia Design.

The fine carved *pataka* known as Te Oha, now in the Auckland Museum, formerly belonged to the Ngati-Pikiao clan, of the Bay of Plenty. It is supported by four posts or piles, each of which has a human figure carved in high relief at its base. Across the tops of these posts are placed the horizontal beams that act as sills, and which are 18 in. wide, the upper surface being flat and the under part being rounded—*i.e.*, convex. On the under-side of

Fig. 7.—Te Oha: A Fine Carved Pataka in the Auckland Museum.

these beams are carved *wheku*, or distorted faces, and the beams project out over the supporting-posts about 3 ft. on both sides. On the top of these sills, plates are laid lengthwise with the building, and about 6 in. from the extremities of the former. Each side wall of the *pataka* is composed of one wide slab of wood about 3 ft. wide, carved on its outer surface, such carvings being the well-known design of *manaia* and human figures, both male and female. The fine slabs or planks are placed horizontally on edge on top of the plates, thus forming the side walls of the storehouse, and taking the place of the upright slabs seen in the other form of wooden-walled *pataka*.

FIG. 8.—A CORNER OF THE PATAKA SHOWN IN FIG. 7.

The carved *pae*, or threshold-plank, in front has a longitudinal projection along the back, which projection fits under the ends of the plates, and is lashed thereto. The principal design in the carving of the two barge-boards is the *pakake*, and on the top of the gable are two *tekoteko*, or human figures, with a human head placed between the two. The angles formed by the lower parts of the barge-boards approaching the *pae*, or threshold-slab, are closed by means of placing three short carved slabs in an upright position in each angle. These slabs are fastened to each other, and secured to the barge-boards by means of lashings passed through holes bored near the edges of each piece.

The inner threshold piece is low, as is usual, and is also carved. The doorway is cut out of the bottom part of the central upright slab of the front

wall, a common method in such buildings. The remainder of the front wall is formed by three upright slabs on either side of the central one. The slabs are placed side by side, and bored near their edges for lashing. Battens of wood, painted black, are placed upright to cover the joints, and are secured by passing the lashings over them. By way of ornament, white feathers are inserted in these lashings, the lower parts of such feathers being secured under the lashing, and the rest projecting on either side. The joints of the slabs forming the roof of the veranda-part of the *pataka* are also battened in the

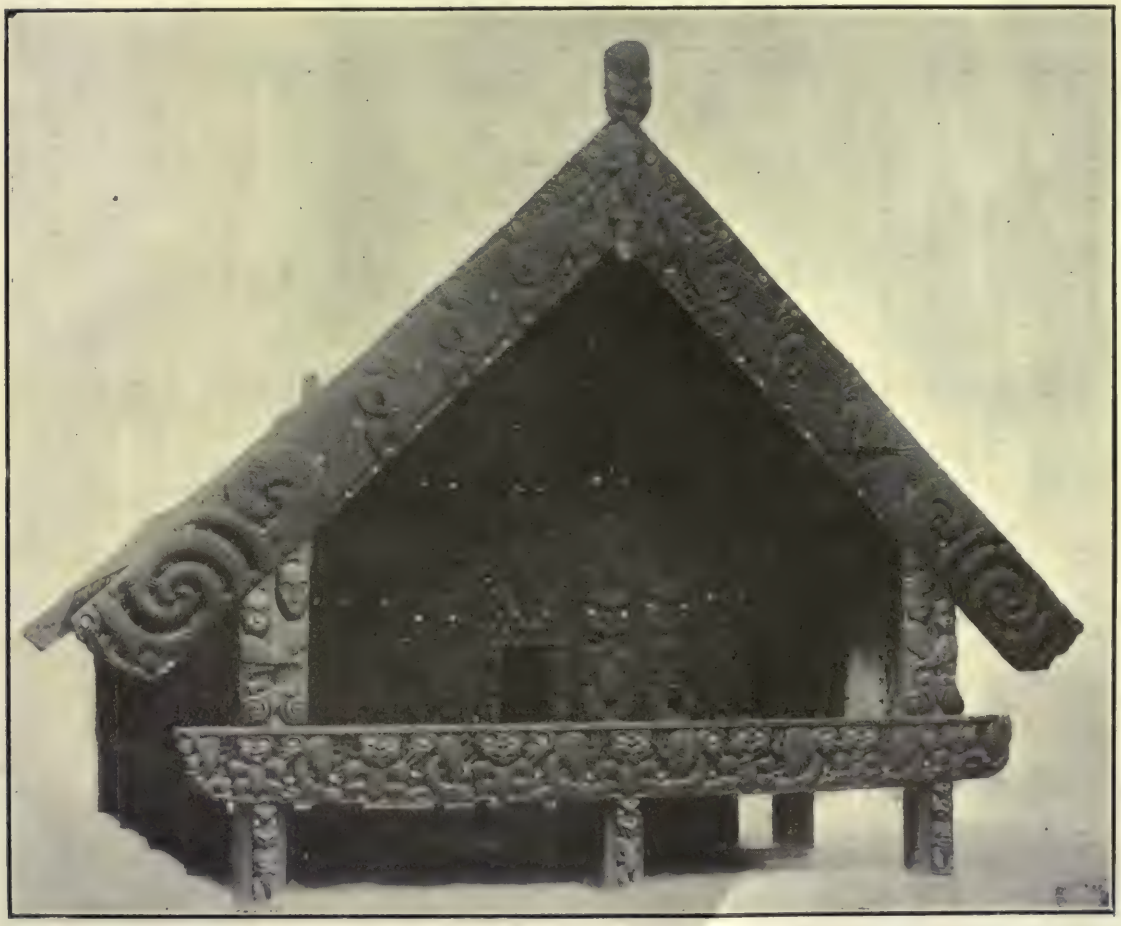


FIG. 9.—THE FOX PATAKA IN THE AUCKLAND MUSEUM, THE FINEST CARVED STOREHOUSE IN THE DOMINION.

same manner. The rafters of the same part are also carved, with an elaborate raised ridge, as also is the under-side of the end of the ridge-pole. The doorway is 20 in. by 18 in.

The huge carved *pataka* of Pokiha Taranui, now in the Auckland Museum, is possibly the most elaborate one ever constructed. It is certainly unusually large and elaborate as to decoration, and must not be looked upon as an ordinary specimen of the Maori carved storehouse. It is about 30 ft. in length, an abnormal size, and was built or manufactured about the year 1868. The exterior of the whole of the four walls is a mass of elaborate carving.

There are carved barge-boards at both ends of the house, a carved supplementary exposed ridge-pole, and carved planks fixed horizontally along the eaves of the side walls. These eaves-boards, carved rear barge-boards, and carved ridge-pole are, to say the least, unusual in Maori architecture. The thatch is not overcast at the eaves, but butts against the eaves-board—a most impossible procedure. The carving on the ridge-pole represents a procession of huge lizards, that on the front barge-boards *pakake*, with *manaia* superimposed thereon. These, on the occasion of a special feast or *hui*, had been decorated with silver coins instead of the usual *paua* shell.

Fig. 10.—A Corner of the Fox Pataka.

Another very fine *pataka*, which is now in the Dominion Museum, is the celebrated one which has visited at least two exhibitions in the Old Country, called Te Takinga. It is said to have been made from the canoes drawn overland from the sea to Lake Roto-rua by Hongi when he took Mokoia Island, in Roto-rua Lake, in 1822. It is well carved, and is still in good condition, although it has been such a traveller since it passed out of the possession of the Maoris. The main figure on the central slab represents Pikiao, an ancestor of the Ngati-Pikiao Tribe. The *tekoteko*, or small figure surmounting it, is named after Te Takinga, a son of Pikiao. The legs or supports seen in the figure are more modern, and were carved by Morehu, of the Ngatihuia Tribe. From end to end of the *paepae* is about 15 ft.

FIG. II.—TE TAKINGA: A FINE PATAKA OF THE BULLER COLLECTION, NOW IN THE DOMINION MUSEUM.

Another very old *pataka* in the Dominion Museum was procured from Maketu. A plate is given of part of the carving, which is very celebrated on the east coast.

In the olden time these carved houses were erected inside the fighting *pa*, so that they might not be destroyed by the enemy when the adjacent village was taken.

In Fig. 13 we see another style of *pataka*, a type more often seen in former times than the profusely adorned ones shown above. Here the carved designs

Fig. 12.—A Very Old Pataka at Maketu.

are confined to the threshold-plank, the lower ends of the barge-boards, and the door-frame, with three human images standing on *wheku*. The carved door-posts (*waewae*) support a carved lintel-piece (*pare*), as in a dwellinghouse. The patterns discernible on the under-side of the roof of the porch are painted on the timbers. The design of the carved threshold-plank is unusual, and worthy of note. The weird figures at the ends thereof, as also on the barge-boards, may or may not represent *manaia*. This store is said to have been constructed by natives of the Ngati-Porou Tribe in 1856 for Wi Tako Ngatata, a Wellington district chief. The name of this *pataka* is said to be Nuku-tewhatewha. It

formerly stood in the garden of Mr. George Beetham, Moturoa Street, Wellington. The doorway of this storehouse is of greater dimensions than was common in former times.

The *pataka* shown in Fig. 14 was photographed as it stood in the grounds of the Christchurch Exhibition. It is quite a new work, but the timbers were carved by Neke Kapua and his sons, of Roto-iti, from old patterns. The planks comprising all four walls are completely covered with carved designs, a thing very rarely seen,

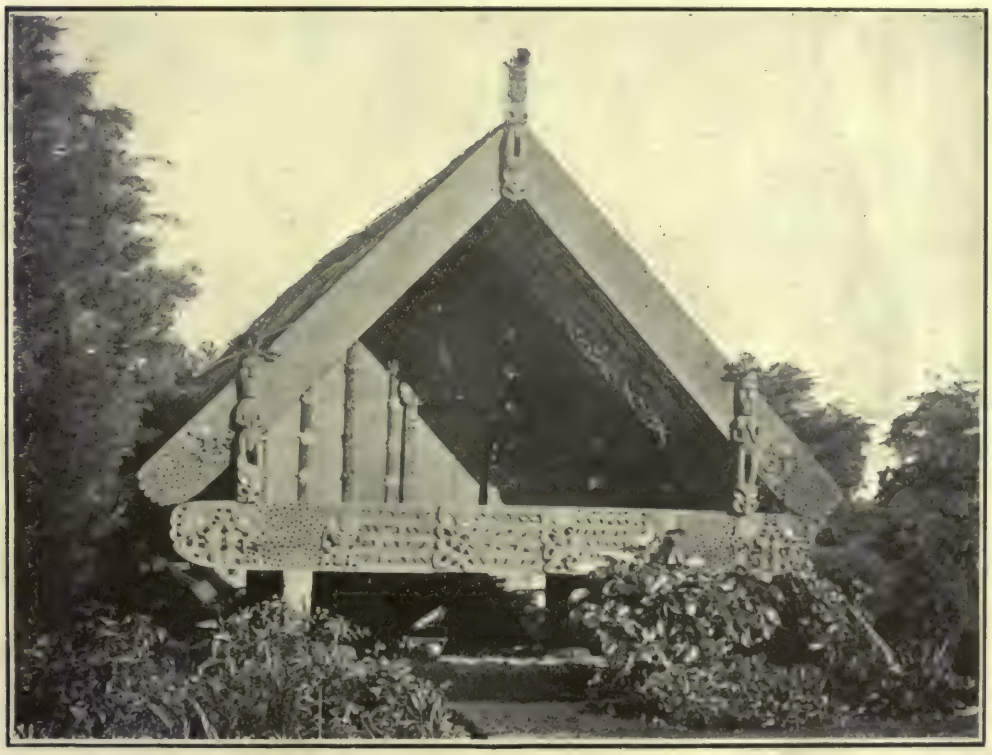


FIG. 13.—NUKU-TEWHATEWHA: PHOTOGRAPHED AS IT STOOD IN THE GARDEN OF G. BEETHAM, ESQ., MOTUROA STREET WELLINGTON.

and it is by no means certain that the carving of the rear wall planks or slabs was ever a native custom in pre-European days; if so, it was very rarely carried out. A carved plank that butts against the lower ends of the thatch in this specimen is also a dubious feature.

The front view of this *pataka* shows most richly carved planks, the bodies of the *pakake* on the two barge-boards being almost entirely lost under a mass of superimposed *manaia* and *wheku* designs, together with a deal of detail work that occupies every available bit of space. It reminds one of some of the stone carvings of the Maya folk.

The next illustration, Fig. 15, shows the carved planks of the front wall of a dismantled *pataka*. Here we have another curious style in the involved and amazingly distorted and uncouth figures depicted. On the first two slabs from the right the figures are fairly distinct, the singular forms being reversed, head and feet; but in the next plank, as also in planks 5 and 6, they are much more involved. On No. 5 the bodies seem to be upright and the heads sideways, while on No. 6 the confusion is worse, the bodies being curved, and the heads

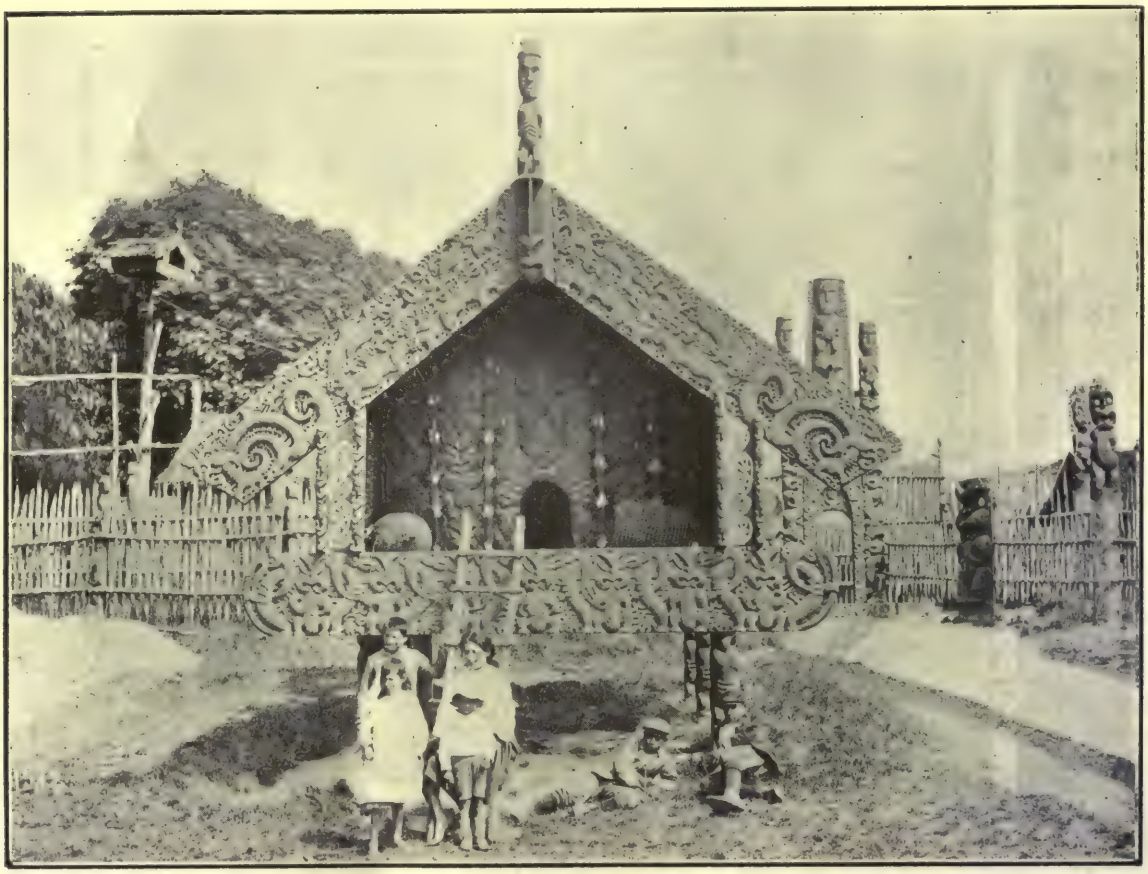


Fig. 14.—Pataka at the New Zealand Exhibition, Christchurch, 1906.

thereof placed at alarming angles thereto, some bodies being apparently headless, or some heads bodiless. The whole forms a very singular study in conventionalized designs, and one yearns to discover the original forms from which these astonishing figures were evolved. The Maori was truly conservative in retaining these old patterns, and objected to change therein.

It may be here noted that, unlike a carved dwellinghouse, a *pataka* or storehouse had no such embellishments in its interior. They were confined to the porch and to the outside of the walls.

Fig. 15.

Fig. 15a.

Carved Planks of Front Walls of Pataka.

The following brief notes on elevated storehouses were contributed by Tuta Nihoniho, of Ngati-Porou :—

Pataka and *rua* were always faced to the east or north-east.

The terms *pataka* and *whata* are both applied to an elevated house—*i.e.*, a walled and roofed hut or house elevated on supporting-posts, such posts merely supporting the platform (*kaupapa*) on which the house is built, and which forms the floor thereof. Such a house is termed a *pataka* because it is enclosed or walled all round ; also a *whata* because it is elevated. An elevated open stage or platform, having no building thereon, is a *whata*, but cannot be termed a *pataka*. The term *whata* may be applied to elevated places that are not platforms, such as racks ; any elevated place on which things are placed, as a rail on which nets are hung to dry ; also to a pole or stump having projecting pegs or branches on which things are suspended. The word is sometimes doubled, as *whatawhata*, applied to a rude erection of poles on which a tree-feller stands.

Pataka were used as storehouses for preserved and dried foods (but not for crops such as *kumara*), also for tools, implements, vessels, and garments.

The posts supporting a *pataka* might be four or six in number, or more, according to the size of the structure. In the case of a carved *pataka*, these, or at least the two front ones, were often embellished with a carved human figure, with eyes of *Haliotis* shell. On the top of these two rows of posts were placed the wide slabs termed *papa kiore*, the plates on which the building was erected. The upright slabs, or *poupou*, were let into the *papa kiore*, or plate, not into a mortised hole in the middle thereof, but into a slot in its edge, and there secured by lashings passed through holes bored through the plate, and others through the upright slabs. The plate also was carefully fitted on to the tops of the supporting-posts. In boring holes in big timbers large cord drills were used, much larger than those used in drilling stone implements and ornaments. In such heavy boring Nihoniho remarks that one person would attend to the drill-point, to keep it in position, while two others manipulated the cords by which the implement was worked—a process that would, presumably, require much practice.

When the upright slabs of the walls were in position in the slots cut in the outer edges of the plates, their outer surfaces were flush with the outer edge of the plate, and a horizontal batten covered the junctions. In some few cases a carved *pataka* had the wall-slabs carved inside as well as outside, but this was seldom seen as applied to the interior of the store. The batten termed *kaho paetara*, that served as a wall-plate, was lashed to the tops of the upright slabs. The flooring-slabs rested on the projecting plates, or *papa kiore*. The roof was first covered with a layer of *toetoe* reeds neatly laid, then with layers of bark of the *manuka* or *totara* trees. Long strips of bark

were arranged across the ridge-pole, so that they extended over both slopes of the roof, while shorter pieces were curved at the end, and the curve fitted over the ridge, the piece covering one slope only. Bark was never secured with ties to the battens, but, when the roof was finished, then *aka* (durable stems of certain climbing-plants) were laid fore and aft on the top of the roof, and secured at the ends only.

In addition to these, other such binders were laid across the roof, at right angles to the others, passing right over the roof, and secured by lashings at the two eaves.

The ornamental carved *pataka* were not by any means numerous, the great majority of such structures being either quite plain (*toto kau*)—that is, constructed of plain hewn timbers—or had such minor adornments as a carved head (*koruru*) on the gable, and, possibly, some carving on the *pae kai awha*, or wide slab in front, over which one passed in order to enter the *roro*, or porch.

Such edifices as carved houses and carved *pataka* were erected only in *pa* or fortified villages, for obvious reasons. If outside the defences, they would be destroyed by the first raiding party that chanced that way. Hence the saying of old that runs, "*He whare maihi ka tu ki roto o Kahukura-awhitia. he tohu no te rangatira; he whare maihi ka tu ki te wa patiki, he kai na te ahi.*"

In his little work "Kaiapohia," Canon Stack remarks as follows: "The visits of a very great chief (*upoko ariki*), such as Tamaiharanui, were always dreaded, and his movements, whenever he entered a *pa* (fortified village), were watched with great anxiety by the inhabitants; for if the shadow happened to fall upon a *whata* (storehouse) or a *rua* (storepit) while he was passing through the crowded lanes of a town, it was immmediately destroyed, with all its contents, because it would be an unpardonable insult for a commoner to eat food upon which the sacred shadow of an *ariki* noble had fallen."

The principal differences between a carved dwellinghouse and a carved *pataka*, or storehouse, is that in the former most of the carvings are inside the building, while in the latter they are outside. The outside carvings of a dwellinghouse are confined to the door-jambs, the lintel-piece, the window-borders, the *pae kai awha*, the *poupou* of the porch, the *tau-tiaki*, the *maihi* with its *parata* and *tekoteko*, and the under-side of the projecting part of the ridge-pole; but in the case of a carved *pataka* the whole of the exterior of the front wall is a mass of carving.

The plain unornamented storehouses, termed *pataka kokau*, or *pataka toto kau*, were erected at any place where they might be required, either within or without the defences of a village. These were often built at cultivation-grounds and temporary dwelling-places, such as fishing-camps on the coast.

The vertical carved slabs composing the front wall of a *pataka whakairo*, or carved storehouse, were fastened together in the usual Maori manner—viz.,

by covering the join with a batten (painted or charred), and then lashing this on with tight-drawn cords passed through holes pierced in the edges of the slabs. Under the lashings, where they passed over the battens, white feathers were sometimes inserted as an additional ornament (*tatai*).

The doors of *pataka* were of two different styles—the *paneke* and the *tatau kauhuri*. The former was a sliding-door that slid in a groove formed in the threshold, the door so often seen in native dwellinghouses; the *kauhuri* was a swinging-door, and it is not clear that it was a pre-European item. A projecting piece at one corner was inserted into a hole formed in the sill, and on this pivot the door swung. To keep it in position, and to supply the place of hinges, it was linked to the jamb by two cord loops passed through holes perforated in the jamb, and others near the edge of the door. This apparatus may possibly have been pre-European, but to us it looks like an idea borrowed from the crude huts of the early white settlers. Some of the oldest natives, however, of Ngati-Porou maintain that the *tatau kauhuri* was a pre-European usage.

When this swing-door was closed it was secured by means of a cord passed through a hole in the door and another in the jamb, and tied outside.

The front board of the porch of a *pataka* is known as the *ipuipu;* it is equivalent to the *pae kai awha* of a dwellinghouse. *Tauwhenua*—fore-and-aft beam on top of *papa kiore*, in middle of *pataka*, to support the posts of ridge-pole and floor.

In a *pataka* of six posts (a common number) there are three *papa kiore* or plates laid across on the tops of the posts. The *amohanga* are the two long slabs laid along fore and aft of the building on the top of the said plates, and on which the walls are erected.

Our native informant has described above two different modes of erecting the superstructure of a *pataka* that may confuse the reader. In the first method, used in building small storehouses, wide plates were placed fore and aft on the tops of the supporting-posts, and on these wide slab plates the floor was laid and the walls erected. In the other method plates were laid on the post-tops crosswise, and then long secondary plates were laid on these fore and aft of the building, on which the walls were built. Again, his application of the term *ipuipu* seems to be an error. It is usually applied to the beams or sills on which the storehouse is built.

The name of the bell-like fixture on *pataka* posts to block the passage of rats is *ato* in the Wai-rarapa district.[1] It was made by tying the upper ends of strips of *manuka* bark to the post, and the lower ends to a small wooden hoop. *Pu kiore* seems to be a descriptive name for this item, and *ato* a specific name.

These *pataka*, or elevated storehouses, were often named after ancestors. Food-supplies kept in such named stores were not eaten by common people,

lest their children die, but only by the descendants of the ancestors after whom they were named.

The high-class carved *pataka* were opened with the same ritual as pertained to the opening of a new house of note. The *kawa* rite was performed over it, and in some cases a person was killed in order to give prestige to the event and to supply food for the feast. In some cases a slave was slain for this purpose, or a few men would raid the realm of another tribe and secure some victims.

Whata-a-rangi, a small *pataka* elevated on one tall post. A platform erected on a tree for storing things on was called by the same name. Some *whata-a-rangi* were small circular structures covered with bark, and used as places wherein to deposit the bones of the dead. The *whata-a-rangi* were used as a storage-place for small items, special food-supplies—such as *huahua*, *kao*, dried fish, &c.—or in which to keep prized implements, ornaments, vessels, and garments.

Whare rangi: This term is applied to a rough booth of branches erected by fowlers in a tree-top.

The name of *whata koiwi* was applied to any elevated receptacle in which bones of the dead were kept.

The *whata pu kiore* was a small *pataka* elevated on a single post, to which post, some distance above the ground-line, pieces of *manuka* bark were secured in a downward slanting position, so as to prevent rats climbing up the post.

The usual form of *whata rangi* seems to have been like unto a diminutive *pataka*, but Te Whatahoro describes a curious form, the entrance to which was through the floor: The *whata rangi* was a small storehouse, like unto a diminutive hut, elevated on the top of a single high post. It was not usual to adorn them with carving, and they were used to keep miscellaneous items in—such as weapons, garments, &c., but not food-supplies. To construct a frame whereon to erect these little huts, two sides of the upper part of the post were reduced, so as to leave a shoulder on each side. Two adzed beams of wood, termed *karaho*, were fitted on to either side of the tenon, so as to rest on the shoulders thereof, and so lashed. Thus these two *karaho* were in a horizontal position, and parallel, the space between them being the thickness of the tenon-like upper part of the post. At either end a small piece of wood was placed between the ends of these beams, which were then lashed together, thus gripping tightly the pieces between them. Then, at right angles to these cross-pieces, two more were placed on top of them, and there lashed to the top of the post, their upper parts being flush with the top of the post. Strong hardwoods—such as *rata*, *kahikatoa*, *maire*, or *ake rautangi*—were selected for the beams, which were adzed into form. Thus the foundation of the little storehouse was in the form of a cross, and on this

was erected a hut of light materials, often of thatch—such as *raupo* (bulrush) or leaves of the *Cordyline*, the latter being a very durable thatch.

These places had no door in the walls, the entrance thereto being through the floor, close to the top of the post. This door was a small wooden trap rudely hinged with pieces of *aka* (stem of a climbing-plant). A person clambering up the post to these aerial stores usually pushed up the trap-door with his head. At one end of the hut was an aperture in the wall, to admit light when a person was engaged therein. At other times it was closed with a flat piece of bark of the *totara* tree (*Podocarpus totara*), which was so arranged as to slide on a horizontal strip of wood. This bark was the inner part of the *totara* bark, the part known as *rangiura*, from which the loose outer bark had been taken off.

When erected on lofty posts, perhaps 25 ft. in height, it was said that ladders were not employed as a means of access thereto, but any one ascending to the store simply clambered up the post, this process being much assisted by the use of the *tamaeke* or *kaupeka*, or climbing-cord. This was a loop of strong cord in which the feet were placed, and which served to confine them and give the climber a good grip on the post with his feet while he was moving his hands upward for a fresh hand-grip. In the case of a thick post or a tree-trunk, a similar looped cord was used in the hands, and which the operator kept repeatedly moving upwards, as he ascended, by means of a quick jerk.

The term *tapaturangi* is sometimes applied to a small *whata rangi*—a hut-shaped box elevated on a single post, and used as a place wherein to keep food, such as preserved birds, rats, &c., destined for the eldest son or daughter of a person of rank, or for a grandchild of such. This term would be used to denote such a place, because *pataka* is a common word applied to common stores. "*Kapa ko te pataka a te mokopuna a mea, he tapaturangi te pataka takotoranga kai*" is an expression that might be made in reference to the small food-store of any ordinary person; it is not such a place as the *pataka* of the grandchild of So-and-so, whose food-store is termed a *tapaturangi*.

Uenuku, a famous ancestor of the Maori, who lived in eastern Polynesia, applied this name to the *whata rangi* of his son Ka-hutia-te-rangi, and located a *ruru* (owl) in the *roro* (entrance-space or porch) thereof as a guardian, which bird was wont to cry an alarm if any thief ventured near. This is said to have been the first occasion on which a *whata rangi* was so named. Uenuku did not want to term his son's *whata rangi* by such a common name as that, or as *pataka*, because other persons so termed theirs by such names. He wanted some new and distinctive name; hence he adopted for it the name of a certain *tapu* bird known as a *tapurangi*, a bird not seen by man, for it was a night-flying bird—heard flying during the night, but seldom seen. It

was rather a small bird, a long bird with long tail-feathers, and its feathers had a gleaming appearance. In olden times, when this bird was heard flying the people would welcome and greet it with these words: "*E, I haere mai koe i Tawhiti-nui, i Tawhiti-roa, i Tawhiti-pamamao. Haere. Haere ki te wa kainga*" (O, you come from Tawhiti-nui, &c. Farewell. Return to the fatherland).

Te Whatahoro informs us that, although *pataka* and *whata* are now interchangeable terms, yet *whata* should, properly speaking, be applied only to open elevated platforms or scaffolds, having no hut thereon, or roof; while *pataka* should only be applied to an elevated house or hut. A platform on the ground is called a *kahupapa*, but never a *whata*, although a platform on a tree—such as those used by fowlers—may be termed a *kahupapa*. As a verb, *whata* means to elevate, support, also to hang. A rack may also be termed a *whata*. It would, however, appear that the term *whata* has been applied to elevated storehouses for a considerable period, inasmuch as any elderly native will agree that *whata rangi* is a name that denotes a small storehouse raised on one post.

From a paper on the food products of the Ure-wera district, occupied by the Tuhoe Tribe, we cull the following: "*Pataka pu kiore* is an expression applied to storehouses so constructed as to exclude rats, by placing a broad slab on the top of the posts supporting the floor of the store. The *whata-a-rangi* is a platform erected in a tree, and is used for storing food-supplies on. The *whata poto* is a platform elevated on posts, with sometimes a thatched roof to protect supplies stowed thereon, but having no walls."

The name of *paerangi*, according to Te Whatahoro, is applied to a small circular hut erected on the top of a single high post. Its foundation is composed of beams affixed to the post in the form of a cross, as described in the account of the *whata rangi*. On the upper surface of the extremities of the cross-pieces are secured pieces of pliant *aka tokai* or rods of *manuka*, bent so as to form a circle. Another such *whiti* or ring is formed just inside it, so as to leave a narrow space between the two rings. The butt ends of a number of pliant rods (*turuturu*), known technically as *pou karapi*, were then inserted in between the two *whiti*, all round, and their tops bent down inwards and tied together. Lighter material was then employed for battens, being tied on to the *pou karapi* at intervals, each completed batten being in the form of a ring, the hut being circular. The frame was then ready for thatching. Pieces of wood were said to have been placed at the bases of the rods, both inside and out, the inner one being the widest, in order to keep them in the desired position.

All *paerangi* are not circular, some are square in form; hence one might make the remark, "*He pataka te ta o te whare paerangi a mea*" (The *paerangi* hut of So-and-so is of a round form).

The *whata rangi* for food were often supported by arms secured to the posts as extra supports.

The Whanga-nui natives seem to apply the term *kauwhata* to the *whata rangi*.

Angas writes, "In their plantations, *pataka* or storehouses are also frequent, in which they deposit the seed during the winter. These *pataka* are always raised upon a pole or placed between the forked branches of a tree, to preserve them from the attacks of the rats.

Respecting the erection and uses of raised storehouses in cultivation-grounds, Angas writes, "Picturesque-looking storehouses for seed are also to be seen in their clearings; these are like large boxes, with a gable roof, and perhaps a carved door, with a little image on the top, and are supported on high poles to preserve them from the attacks of the rats, the natives ascending to them by means of a sort of rude ladder."

Marshall, who visited the Taranaki coast in 1834, mentions elevated stores for firewood as having been seen there: "The wood-houses are distinct from all the others; the most perfect specimen of the kind which fell under my own observation was at Orangi-tuapeka. It was raised upon a stage about 6 ft. above the ground, and in its external appearance resembled a large dove-cote. The roof and three of the sides were so built as to exclude the wet, one side only being exposed to the weather; and that, serving to draw out the wood by, admitted of being shut in by a door swung upon hinges, and fastened when shut by a thong of hide." The "swung upon hinges" is passing doubtful, and looks like a European innovation.

The following is a small contribution on the Nga-Puhi storehouses by Mr. Stowell (Hare Hongi):—

DEAR SIR,— Native Department, Wellington, 23rd May, 1912.

I have your memo. of the 6th instant, asking for information (from Nga-Puhi sources) as to—(1) Storehouses, elevated; (2) storehouses, ordinary—*i.e.*, on ground-line; (3) storehouses, semi-subterranean; (4) pits for storage; and (5) platforms, elevated, no house, roofless: their names, descriptions, and uses.

As to (1) storehouses: The generic name for these is *whata*,[1] a term which has its origin in the verb *whata*, which means "to elevate on supports."

(*a.*) *Whata* were of various kinds, having various uses: *Whata-kai*, for the storage of readily accessible foods, preserved and otherwise; *whata-kahu*, for the storage of superior garments (but see *pataka*); *whata-ko*, for the storage of digging and gardening tools; *whata-taonga*, for the storage of goods in general; *whata-tao*, *whata-huata*, *whata-koikoi*, for the storage of fighting-spears, armoury; *whata-moenga*, for sleeping.

The *whata* varied between 3 ft. and 6 ft. high posts. They were ascended by means of an *ara-whata*, consisting of a stout piece of timber with stepping-places notched in at suitable intervals. To ensure the *whata* being rat-proof (for rats destroyed food and garments), two main devices were used: One of these devices was to procure a fairly sound but derelict canoe (of *totara* or *kauri* timber), cut it into two equal parts, and place each half parallel and inverted along the top of each pair of the *whata* posts. Rats might climb the posts, but could not get past the inverted half-canoes, and so into the *whata* itself. (In the event of no such canoe

being procurable beams were hollowed on one side, and, this side being placed lowermost on the *whata* posts, were quite as effective as inverted canoes.) The second rat-proof device was to notch each post all round, about 2 ft. above the ground, in this way: No rat could get past these notches. (In modern times a broad piece of tin is nailed around each post, thus saving labour and securing equally good results.)

The four ground posts of a *whata* were 6 in. to 8 in. in diameter, having to carry the heavy beams of the superstructure. The post-plan was usually a square, the oblong shape of the *whata* being secured by allowing its floor-beams to project a few feet at one or both ends. Invariably the floor, sides, and roof of a *whata* were extended to form a porch at its front. The ground posts having been firmly sunk into the earth, two strong parallel beams were securely fastened to each pair of posts. These were lashed to the posts with *torotoro* vine, which passed from under nicks in the posts through holes bored through each side of the beams. That being done, strong beams were laid along the back and front, which in their turn were securely fastened. These were on a line with the ground posts: . The corner wall-posts were next sunk into the side beams over the ground posts, and were fastened to the cross-beams. These formed the true corner posts, no matter how much the *whata* itself projected at either or both ends. The floor was then laid down crosswise. It commonly consisted of split and adzed beams, which were trimmed to a uniform thickness and well fitted. Such a floor was of great strength and durability. As this work proceeded the wall-posts were set up at suitable intervals, and well fastened down. When the floor was carried through the whole of the side wall, posts were thus in their places. To these posts (where thatch was intended, for sometimes the walls were of slabs) were fastened, at intervals of 12 in. or 15 in., long laths of 1¼ in. *kahikatoa* (tea-tree); these were called the *kaho*, and, whilst strengthening the walls, carried the thatching. The two centre posts were now set up back and front, on a line with the ground posts, and to these the ridge-pole was securely attached. The length of the ridge-pole was regulated by the floor-length, and it projected from the centre posts accordingly. From the ridge-pole rafters were let in to each wall-post, and fastened down. *Kahikatoa* laths similar to those on the side walls, but closer together to carry the weight, were then fastened to the rafters. Whilst this was being done the work of setting up the additional posts for back and front was going on, and an opening was left beside the centre post at the front, for the door. When all of the posts and rafters had been served with *kahikatoa* laths the whole was ready for receiving the thatching. This was usually of *raupo* reed, a reed which was readily procurable, durable, easily handled, which gave coolness in summer and warmth in winter. The side and end walls having been first thatched, a start was made on the roof. This sometimes got a first coating of *nikau* palm, then one of the *raupo* reed, and finally one of *toetoe* grass or *wiwi* (the common rush). More laths were then fastened on to bind the whole down. These laths were commonly concealed, to become visible only when decay of roofing was well forward. A sliding-door was made, and an *ara-whata* (step-ladder) was provided for permanent use. This was not fixed to the *whata*, for that would give access to rats; it was always removed when not required for immediate use. A *whata* was not, in general, provided with a special enclosure, that being reserved for the more fanciful *pataka*. It should be observed that the thatching was secured with prepared and toughened flax.

(*b.*) *Whata-pouwaka:* This was an erection at the top of a single post, which post was 8 in. or 10 in. in diameter, rising some 20 ft. or 30 ft. in the air. The *whata-pouwaka* was used for the reception and deposit of bones or skeletons of deceased children (sometimes the deceased wives) of high chiefs. The post and woodwork of this *whata* was always more or less carved, inlaid with *paua* shell, smeared with *kokowai* (red ochre), and it stood in a small and special enclosure. (*Kokowai* warned all and sundry of the presence of death. The black and white markings found in war-canoes denoted an appreciation of the fact of Life and Death. White represented "Te Ao-marama," or the World of Light, therefore of Life; black, "Te Ao-po," or the World of Darkness, therefore of Death.)

A suitable pole having been procured, carved and smeared with *kokowai*, was firmly set into the earth. The *whata-pouwaka* was then put together on the ground, and when finished was carried to the pole-top, and fixed in its place. In shape the best class of *whata-pouwaka* was exactly like that of the best class of *whare-puni* or *whare-ahuru*—that is to say, its shape was that of the middle section of a superior (keel up) canoe, with accentuated curves. To secure this shape the lines of the ground-plan of both walls were decidedly curved, thus: ( ). The ridge-pole was arched thus: ⌒; and the side walls and roof showed this shape: ⌒—the shape of an inverted canoe. This *whata* had a porch and a small sliding-door. The walls were sometimes made of worked slabs, sometimes of thatch. The roof consisted of thatch or of *totara*-tree bark, sometimes a layer of vari-coloured *kakaho* reeds being first put on. The *whata-pouwaka* was a house in miniature, the largest being some 4 ft. long, 3 ft. wide, and 2 ft. in height. (Shaped in this canoe-design and with the floor sunk some 12 in. or 18 in., the *whare-puni* gave one a peculiar idea of strength, grace, elegance, and comfort, which was admired and appreciated by all. In the construction of these *whare* the Nga-Puhi people exhibited remarkable skill, and even art.)

(*c.*) *Pataka:* The *pataka* was the finest-designed and most elaborately worked, carved, and inlaid form of elevated storehouse. No pains were spared in its construction, and it therefore ranked with the *whare-whakairo*, or heavily carved assembly-hall, as one of the show-pieces of a really well-furnished *kainga* (village) or *pa* (fortified village). The *pataka* was used for the reception and storage of garments of the finest workmanship, and other works of Maori art, which were only withdrawn on very special occasions. It had its own little enclosure or fence, within which none were allowed to casually wander. The *pataka* and its valued contents was under the immediate control of the high chief of the village. Very few of the villagers had access to the *pataka*. Its name, *pataka*, conveys the sense of something special and private and enclosed.

(2.) Storehouses, ordinary—*i.e.*, on ground-line: Of these there were two principal kinds—*i.e.* the ordinary *kauta*, or roughly built house, and the *wharau*, shed.

(*a.*) The *kauta* was built of various roomy sizes, its chief feature perhaps being a roomy porchway and extra long eaves. Beneath these, leaving plenty of doorway-room, firewood was neatly stacked up for winter use. The *kauta* was used for the storage of rough-and-ready things, for fishing implements and material, including canoe-paddles, and generally for the temporary or hurried storage of anything from the rain. Fishing-nets were hung up in a *kauta*, and were thus easily procured when required. The larger class of *kauta* was used for a kitchen in wet weather (the Maori preferred to cook out of doors). In a properly ordered *pa*, however, cooking-houses were built specially, and these were called *whare-umu*, or oven-house.

(*b.*) *Wharau* (shed): These were built of various sizes, their principal feature being that one or both ends were sometimes open, and that one or both sides was sometimes left open. The *wharau* was always built low, and mostly rather wide. A special class of *wharau* was that in which the better kind of canoe or canoes of the village was stowed. As the superior canoes were as much as 80 ft. in length, the length of a good canoe-shed or *wharau* may be imagined. In this, too, the large and long fishing-nets, or *kupenga*, were hung. The canoe-paddles were rarely left in this, owing to the risk of children carrying them off and mislaying them. The *wharau* was always handy for the temporary stowing-away of different kinds of goods.

(3.) Storehouses, semi-subterranean: These were of many grades, which ranged from the pretentious *whare-poka* to the much more humble *whare-rua*.

(*a.*) *Whare-poka:* Excepting perhaps for its very low walls, the *whare-poka* could not be distinguished from an ordinary *whare* Maori. Low sides only were required, because the floor was dug out (*poka*) and sunk 2 ft. or more from the surface. The *whare-poka* could be built only in very dry situations. It was a most snug concern, and could be used both for storage and for living in. It was built with a porch. *Whare-poka* were built, too, against terraces where sometimes a natural opening was found. A *poka* was made when necessary into the terrace-side, and a front put in, with doorway.

(*b.*) *Whare-rua:* This was essentially a storage house and pit. Its plan was long and narrow. Its pit (*rua*) was sunk to a depth of 6 ft. It was finished off with a roof only, no side walls. It could be built only in very dry situations, and was largely used for storing seed-*kumara* tuber, and tubers for winter and spring use. They were commonly described as *rua-kumara.*

(4.) Pits for storage (*rua-kumara* or *rua-kai*): These food-pits were common to every village. They were built with the one object of preserving the seed-tubers from destructive insects, mould, &c., or, as the Maori himself expresses it, from the attacks of the *pukupuku, tonatona, tahumate,* and *kunawhea.* (The Maori had no hope of replenishing his seed-tubers from sources outside of New Zealand; therefore, supposing a very bad winter or negligent storage caused widespread destruction to their seed-tubers, the position would have been most serious for them.)

(5.) Platforms elevated, no house, roofless: These were termed *komanga* and *timanga.* They were four-posted (I have seen three-posted), and stood from 5 ft. to 10 ft. in height, rat-proof. Seed-tubers and eating-tubers not required for some months were permanently stored upon these stages, until planting-time came around. They were well covered in; so that if the pit-preserved seed-tubers of the village were spoiled or destroyed, the air-preserved would probably be sound. "Put not all thine eggs in one basket," is a principle which the Maori followed, who says, "*Ka mate kainga tahi, ka ora kainga rua,*" or one-homed is liable to die, two-homed is more likely to live.

Sometimes when clearing a *waerenga* for a new plantation, one or more suitable *manuka* trees (mammoth tea-tree) would be left standing. From the (8 in. or 10 in.) trunks of these trees stout branches would project, three or four. When these were required for use as *komanga* the branches would be lopped off level at a suitable height for strength. Cross-beams would then be fastened to the branches, and the staging would be built upon these, which served their purpose excellently well, and with one-half of the labour required in building an ordinary *komanga.* In all probability, from this primitive style of building the *ko-manga* or *ti-manga,* the name originates—that is to say, from *manga,* which signifies branch, branches.

Kaati ake enei mo naianei.

HARE HONGI.

Mr. A. Hamilton, Dominion Museum.

FROM a Nukutaurua native: *Whatarangi,* or *whata rangi*—A small *whata* on one post only erected near or in a *pa*—to put food for spirits in.

Similar erections to the above were sometimes used for placing the food of a *tapu* person in, that it might not be interfered with or brought into contact with common objects, things pertaining to tribal gods, or, in short, for any items of a *tapu* nature. Such small *whata* as these we have seen in the Ure-wera district within the past few years.

Awhio-rangi: Small one-post *pataka* for *atua* and *toenga kai,* so termed by a Taumaru-nui native.

The small box-like structures elevated on posts, and used wherein to place *tapu* items, were formerly very common, and even now may be occasionally seen. Angas speaks of one he examined at Kai-tote, Wai-kato district: "A square box, elevated on posts, and covered with a roof, raised by means of slender sticks. . . . It was filled with old garments, which I afterwards learned were the property of a very celebrated person lately deceased, and that these garments had been placed within this prohibited place under the most rigorous *tapu.*"

In an account of Santa Maria, an island north of the New Hebrides, Mr. W. Coote remarks: "Scattered about the village were small storehouses raised some feet from the ground on piles, and identical in every respect with those used by the Maoris of New Zealand."

It will be noted that similarity of design exists in the carved figures on these elevated storehouses, the most noteworthy item being the *manaia*, the *pakake*, and distorted human figures. Of these the latter may be introduced in any design, or almost any part of the building; the *manaia*, being less universal, was principally employed on the *paepae* (outer threshold), the *maihi* (barge-boards), and on the side walls. The *pakake* (whale) pattern is confined to the barge-boards. *Manaia* and distorted human figures are often superimposed on the *pakake* (see Figs. 7-9, &c.). In Fig. 9 is seen the detail of fine carving on the body of the *pakake*, the effect of which is emphasized by the system of small notches (known as *taratara-o-kai*) cut in the edges of the carved lines. In Fig. 7 we note that the human figures on the barge-boards are each attended by a single *manaia*, while in Fig. 9 three unattended figures appear on each *pakake* of the barge-boards, such figures being, in form, neither human nor true *manaia*, but something between the two. In all these designs we see frequently recurring the three fingers that are so marked an attribute of Maori-carved figures, a peculiarity which appears to have been formerly common in far-distant lands.

The eyes of all these figures are composed of rounded pieces of *paua* (*Haliotis*) shell countersunk in the wood.

In Fig. 7 the scroll that is said to represent the head of the *pakake* on the lower part of the barge-board appears to end in a head furnished with the usual shell eye, while below and distinct from it is a *manaia*. On the barge-board shown in Fig. 10 the scroll of the *pakake* ends in a *manaia*-like figure. In this Fig. 10 also appear male and female human figures, showing the tattoo patterns of the two sexes.

Again, in Fig. 7 we have the double *manaia* and intervening *wheku*, or grotesque human figure, as a central design on the threshold-plank, while on either side of it as also on the barge-boards the single attendant *manaia* only appears. In Fig. 9 no double *manaia* is seen, while in Fig. 6 each *wheku* is flanked by two *manaia*. The uppermost figures on the barge-boards in Fig. 9 are grasping the tails of the two *pakake*.

In Fig. 7 we see the junction of the two barge-boards at the gable occupied by two human figures, and a spare head between them. This is uncommon; for the usual thing is to see the join covered with a carved head—in this case termed a *parata*—with a complete human image, called a *tekoteko*, above it, and projecting above the ridge of the building. In some cases one may see a *tekoteko* only employed, or a *parata* with no surmounting *tekoteko*, more especially in the case of inferior storehouses.

The magnificent *pataka* depicted in Fig. 9 was constructed about 1868, and was erected at Maketu, the principal owner being Te Pokiha Taranui, a well-known chief of the Arawa Tribe, and known to Europeans as Fox. The principal human figures in the carved designs represent certain ancestors of the tribe.

In Fig. 11 we have a fine type of *pataka* of ordinary size that presents some interesting features. It was the property of the late Sir Walter Buller, K.C.M.G., and the photograph was taken when the *pataka* was standing on the shore of Lake Papaitonga. It will be noted that the door is embellished not with carved design, but with painted patterns, and that the scroll representing the head of the *pakake* is of a pronounced circular form, and not the archaic design seen in Figs. 7 and 9. The *paepae*, or threshold, shows the single *manaia* design that leaves the central human figure a free agent, having no flanking *manaia* facing it. No *manaia* appear on the barge-boards, save at their lower extremities, while immediately above the scrolls are two obscure designs that may represent conventionalized or symbolical forms of some creature, mythical or otherwise, inasmuch as those designs are possessed of eyes. The grotesque figures carved on the two front supporting-posts have eyes represented by whole *paua* (*Haliotis*) shells.

In Fig. 16 are shown a pair of barge-boards in which the *pakake* figures are clear and prominent, not being covered by superimposed secondary figures. One lonely figure is so situated. They are also remarkable on account of the two scroll-like figures being of almost equal size, thus differing from Figs. 7 and 9.

FIG. 16.—MAIHI, OR BARGE-BOARDS, SHOWING CLEARLY THE PAKAKE DESIGN.

In Fig. 17 we have a style that is met with occasionally in the barge-boards of both *pataka* and dwellinghouses, in which the lower part only of the barge-boards is adorned with carving.

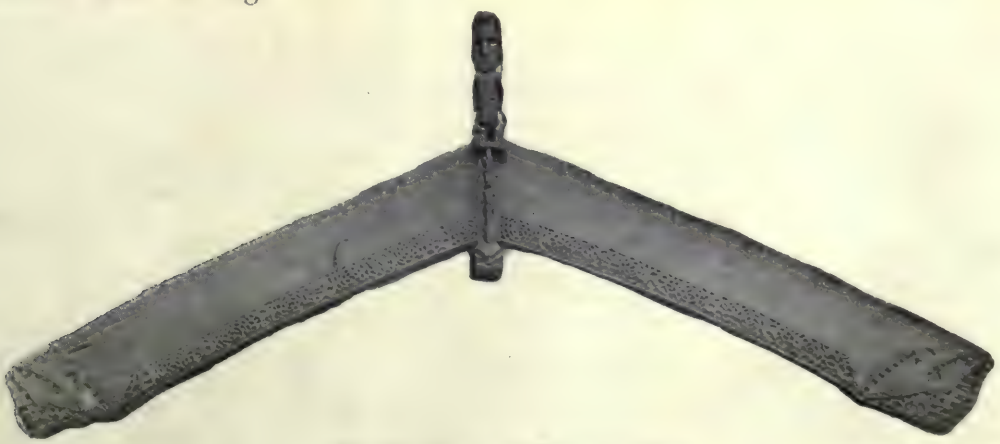


FIG. 17.—MAIHI, OR BARGE-BOARDS.

In Fig. 18 we have a form of *paepae* or *pae-kai-awha* (outer threshold) wherein the *manaia* is absent, and replaced by scrolls between the heads or human figures, various details filling up the smaller spaces between the principal designs, the whole being enclosed between raised borders.

FIG. 18.—PAEPAE OR THRESHOLD OF THE PATAKA "HINANA," OF TE HEUHEU, AT WAIHI, TAUPO.

Of a rarer style is the carved design on a threshold now in the Whanga-nui Museum (see Fig. 19), in which the *wheku* are of an unusual form, and the centre-piece most uncommon.

FIG. 19.—CARVED THRESHOLD OF PATAKA, WEST COAST OF NORTH ISLAND.

In order to show the detail work we give a few illustrations of the doorways of *pataka*—that is, of the central planks of the front walls, in the base of which planks the doorways were made, usually of small dimensions. Fig. 20 shows two such planks. In the right-hand one the principal figure has a *heitiki* suspended from its neck, a form of ornament worn as a rule by women only. On either side are grotesque figures with heads placed sideways, below which appear what may possibly be *manaia*, but curiously distorted. On either side of the doorway appear two grotesque heads. The finishing-off process of small notches has not been completed on the left side of the main figure.

In the taller specimen on the left the head of the principal figure is a curiously distorted design, a peculiarity most desirable apparently in Maori eyes. The head of the small figure below it shows that the native carver was quite capable of making a much better representation of the human head. The flanking figures with heads placed sideways on the bodies extend in this case from top to bottom.

Fig. 21 shows a central plank and door in position. In this case the principal figure is flanked by somewhat uncommon designs, there being a notable lack of minor grotesque forms of semi-human shape. It will be noted that the head of the prominent figure is not of the *wheku* or distorted type, but is to the native eye a natural and lifelike representation. Tattoo patterns are plainly shown.

Fig. 20.—Two Central Planks of Front Walls, showing Doorways.

Fig. 21.—Central Plank of a Pataka, showing Doorway.

Fig. 22.—"Hinana" Pataka at Waihi, of I'e Heuheu.

We now give an illustration of a form of *pataka* that was much more customary in former times than the highly ornamental ones, the form in which but few carved designs were seen. (See Fig. 22.)

As we here see it, the only carving visible is on the lower ends of the *maihi* or barge-boards, but it formerly possessed a highly carved facing-board, for which see Fig. 18; also a *tekoteko* or figure covering the junction of the barge-boards; as also two *tautiaki* (syn. *amo maihi*), carved uprights supporting the barge-boards.

This was the *pataka* of the chief, Te Heuheu, of Taupo, and it formerly stood at Pukawa, but was removed to Waihi. It is named Hinana. A glimpse of Lake Taupo is caught past the *karaka* trees. The trail of the serpent is noted in the shingled roof.

FIG. 23.—COMMON FORM OF PATAKA.

From an old Print.]

In Fig. 23 we see a specimen of the common order of raised storehouses, taken from an old print.

Our next two illustrations, Figs. 24 and 25, show two old elevated stores, much the worse for wear, as one often sees them in native hamlets at the present time, for slovenliness ofttimes marks the adoption of our civilization by a primitive folk. No. 24 we saw in the "nineties," before it became dilapidated; it then possessed a lone piece of carved work—a *parata* or carved head, from the mouth of which a lizard projected as though in place of a tongue. Probably the carved head being held by the lad is the same one.

FIG. 24.—OLD PATAKA AT MATAATUA, RUATAHUNA.

FIG. 25.—OLD PATAKA AT TAUMARU-NUI.

In Fig. 26 we have a village scene such as is now seldom seen, for its only European items are the clothing of the natives and the building, of which the white roof can be seen in the background. This old order of things is rapidly passing away. In the centre stands a common unadorned *pataka*, such as were principally used formerly. Note the firewood stacked along the wall of the shed to the right. Some of the huts are roofed with bark.

Fig. 27 shows us a small hamlet wherein we see two *pataka* and two dwelling-huts, the former showing European influence in the material used. To the left

FIG. 26.—NATIVE VILLAGE OF KORINTI, WHANGA-NUI RIVER.

front is a cooking-shed, showing firewood neatly stacked in the shallow porch against the front wall.

The village scene depicted in Fig. 28 is an excellent one. It was sketched at the Bay of Islands by a member of the United States Exploring Expedition in 1840. Two items of interest therein are the elevated platform to the right and the *pataka* with walls and roof composed of thatch. These ordinary items made by securing thatch to a framework of poles or rods are still seen in native hamlets occasionally.

FIG. 27.—A SMALL NATIVE HAMLET.

FIG. 28.—A MAORI VILLAGE SCENE.

United States Exploring Expedition, 1840.]

In Fig. 29 is shown a modern type of *pataka* that offends the eye of the student of the old-time Maori, inasmuch as the building is constructed of sawn timber and roofed with corrugated iron. To this European structure certain Maori carvings have been affixed—viz., a *paepae* or porch-threshold, a *tekoteko*, and two barge-boards the lower ends of which have been carved. On the side-walls are secured other carved figures that appear to be old side-posts (*poupou*) of a dwellinghouse.

The information given above on the peculiar carved designs used in decorating a *pataka* is decidly meagre. In future bulletins it is proposed to deal further with the subject of Maori carvings, where dwellinghouses and canoes are described in detail.

As to the origin of the Maori carving we are by no means certain. It is clear that we find nothing like it among the isles of Polynesia—that is, among the Maori

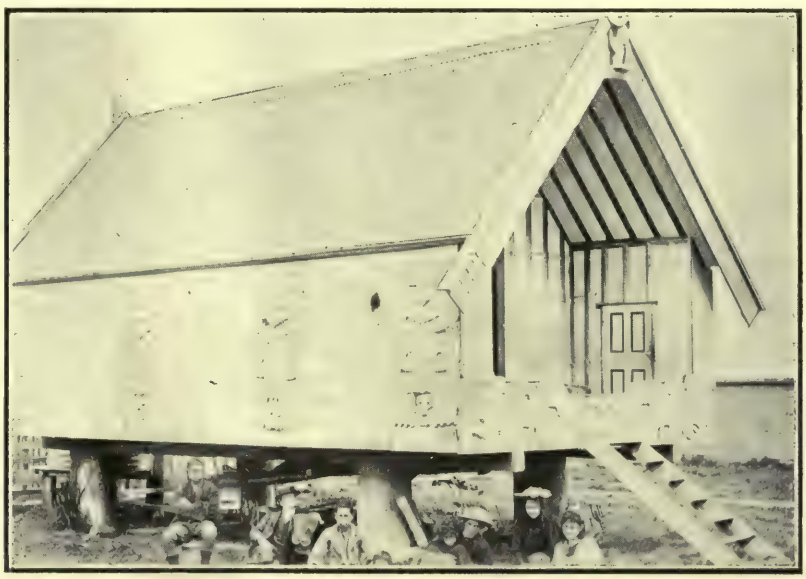


Fig. 29.—A Modern Pataka: Sawn Timber and Iron Roof.

folk who inhabit the far-scattered isles of the central and eastern Pacific. Hence some writers have stated their belief that the carving of the Maori of New Zealand is a local invention or growth, and has not been derived from any outside source. This view we cannot agree with, though recognizing the fact that such carvings and patterns are not met with in Polynesia. We do, however, find resemblances between certain patterns and schemes of Maori carving and others of Melanesia (including New Guinea in that term). The former are much more conventionalized than Melanesian forms, contain more detail, and are of a much more artistic finish, the execution in many cases being most excellent, as may be seen by referring to our illustrations. As one illustration of such resemblance we reproduce a photograph of three carved planks from Melanesia, now in the Australian Museum, Sydney, which show carved designs that might well be the prototype of the design seen in Figs. 3 and 5.

Mr. R. Etheridge, Curator of the Australian Museum, Sydney, has been good enough to forward us the following notes concerning these carved planks: "Memento carvings—Carved boards, partly in relief, partly in fretwork, or as fretworked beams usually of considerable size. The huts in which these carvings (and masks) are erected and publicly exhibited are called *Fu na totok* (North New Ireland), *Mirir* (Gardner Islands), and *Arionare,* farther to the south-east. These boards also display the Manu or bird (totem sign) of the dead, accompanied by animal representations, as the snake, lizard, shark, dolphin, pig, &c. These are not totem signs, but represent evil spirits which fight with the Manu, and are finally conquered by him. The totem signs are taken exclusively from the bird world. Every carving has a particular story illustrating the conflict between a

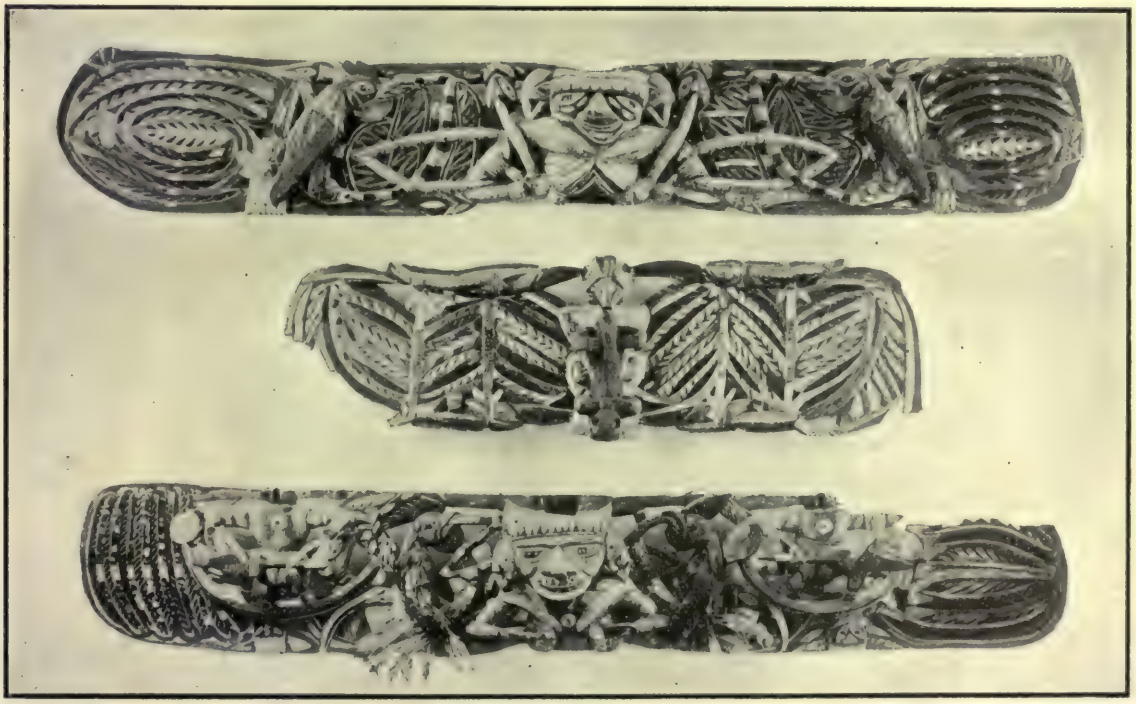


FIG. 30.—MELANESIAN CARVINGS.

Manu and the evil spirits. A great number of legends and fables exist concerning the former."

We have also to thank the Curator of the Australian Museum for permission to reproduce these interesting photographs.

The description of these planks agrees with that of the barge-boards of a Maori *pataka* or dwellinghouse, the lower ends of which are often pierced work or fret-work, the upper part being carved in relief. Again, *manu* is the Maori word for bird, and the contention of good with evil spirits is of interest. In connection with the two *manaia* in contact with a central human figure as seen in Maori designs, the theory is held by some that the group represents the good and evil spirits contending for the human soul, as taught in the cult of Zoroaster.

In the Maori design we have the two "bird-headed" figures termed *manaia*, one on either side of a central grotesque human figure, their beaks in contact with the ears or shoulders of that figure. In Fig. 30 of the Melanesian forms we note a similar scheme and arrangement, though much more primitive, both in the scheme and execution, than the Maori form. Thus, in the uppermost item we see the central grotesque figure, with a bird facing it on either side, though a space exists between them. But in the lower item we see these bird-figures close to the central one and

FIG. 31.—LOWER PART OF BARGE-BOARD OF A MAORI HOUSE.

connected with its head, though not actually touching it with their beaks. They are gripping some object in their beaks; and the bird to the left on the lower carving bears some resemblance to a bird gripping a snake in a carving from New Ireland shown in Brown's "Melanesians and Polynesians." In comparing these figures with Figs. 3 and 5, showing the Maori forms, the resemblance is striking. Again, the ends of the planks or slabs in Fig. 30 show designs somewhat resembling those on the lower ends of the barge-boards of a Maori carved house (see Fig. 31).

In Fig. 32 we note carved patterns on New Guinea implements that resemble Maori work, especially the Maori pattern termed *puhoro*, and certain patterns painted on the rafters of Maori houses of the best type. (See also Brown's "Melanesians and Polynesians," p. 142.)

FIG. 32.—IMPLEMENTS FROM NEW GUINEA.

We hope, at some future time, to go further into this question of the origin of the Maori carved designs, as also some other Melanesian affinities noted in Maori culture, among which the system of fortification adopted in New Zealand will have a prominent place.

It will be noted that in the best-executed type of carving the human figure is grotesquely rendered, that distorted heads or faces (*wheku*) abound, and that the motive of much of the carving is by no means clear to the European observer—

indeed, it is practically impossible at the present time to obtain from natives any explanation of such designs. The names of certain patterns are remembered, as *unauna, rauru, pakake, kekerepo,* &c., but the origin and meaning are lost. Some designs probably were symbolic, but the key thereto is for ever gone unless such forms or their more primitive originals can be traced and explained in other

FIG. 33.—TYPES OF SMALL ELEVATED STORES.
From Angas.]

lands. Maori carving may or may not have been conventionalized locally, but we cannot support the assertion that it was of local origin.

DIMINUTIVE ELEVATED STORES.

Of these items we find a number of illustrations in the works of early writers. Thus in Fig. 33, taken from Angas, we have no less than four small

pataka, or *whata-rangi*, illustrating two types—the rectangular with flat floor, and the curious form made by roofing over a section of an old canoe or a portion of hollow tree-trunk.

The two specimens of the latter form are each supported by a single post; the lower rectangular one has two posts, while the upper one has one stout post and a light one supporting the rear end of the little store. In the background of the lower sketch appears the stockade of a village. The upper *pataka* to the left was sketched at Ahuahu, on the west coast; that to the right at Te Rapa, Taupo; the

FIG. 34.—CHALLENGING A PARTY OF VISITORS.
From Angas.]

lower one on the left was also at Taupo; while the small one to the right rear was the property of Te Rangi-haeata, a Ngati-Toa chieftain, at Porirua. In the background of the upper sketch, to the left, we see a potato-store, and in the lower is a woman pounding *Phormium* fibre with a stone beater.

In Fig. 34 we have another scene as depicted by Angas, showing the *wero* (challenger) casting his spear at a party of visitors arriving at a village, in accordance with an old Maori custom. In the centre stands a small *pataka* supported by one post on which are cut notches to serve as steps for the purpose of ascent.

We have in Fig. 35 another sketch from Angas, showing a feast at Matata, Bay of Plenty. This is given as illustrating an open unroofed platform on which baskets of food products, probably potatoes, are stored. It also serves as a rack on which

FIG. 35.—A FEAST AT MATATA.

From Angas.]

to hang sundry fish, while from one elevated horizontal pole are suspended bunches of maize-cobs. Putauaki, or Mount Edgecumbe, somewhat poorly defined, appears in the background.

FIG. 36.—VILLAGE SCENE.

Another village scene is presented in Fig. 36, taken from an old plate. It includes a small *pataka* on one supporting-post, and a slight-looking elevated platform. In the foreground are four persons engaged in pounding the edible roots of the common fern (*Pteris aquilina*), formerly much used for food.

In Fig. 37 we see a small *pataka*, adorned with carving, as it stands in the grounds of the Sanatorium at Rotorua, while Fig. 38 shows a similar one in the model native village erected in the grounds of the New Zealand International Exhibition at Christchurch in 1906–7.

Fig. 37.—Pataka in the Sanatorium Grounds, Rotorua.

Fig. 38.—Small Pataka in Model Native Village, New Zealand Industrial Exhibition, Christchurch.

Curiously enough we have no good side-view of a carved *pataka*, such as Figs. 7 and 9 in the Museum collection. In like manner we are sadly lacking in illustrations of pit stores and such common and unpicturesque items.

II. ORDINARY STOREHOUSES, BUILT ON GROUND-LINE.

This type of storehouse was not elevated on posts, but was built on the ground. In some cases we hear of raised earthen floors in these storehouses. In others earth was piled up against the outer faces of the walls, as in the case of sleeping-houses, and which had practically the same effect as excavation of the floor.

In some of the native villages early voyagers saw such buildings of a large size, which were utilized as public storehouses, containing food, implements, weapons, &c., for the benefit of the village community. Again, smaller houses were used as storage-places for the food, &c., of a family group, or, in some cases, of a single family.

The best description given of the large storehouses mentioned above is that left us by Crozet in his excellent account of his sojourn at the Bay of Islands in the year 1772. He describes the arrangement of dwellinghouses in the fortified villages of that district as being two rows of houses with an open plaza (or "parade-ground," as this military writer terms it) between them, and continues, "The whole space between the two rows of houses is only occupied by three public buildings, of which the first and nearest to the village-gate is the general magazine of arms. A little distance off is the food-storehouse, and still farther the storehouse for nets—all the implements used in fishing, as well as all the necessary material for making the nets, &c. At about the extremity of the village there are some large posts set up in the form of gallows, where the provisions are dried before being placed in the stores."

The writer and his companions were shown through the series of public storehouses. The first was the armoury of the village, and contained quantities of weapons of various kinds—spears, clubs, *patu*, and darts—as also such implements as stone adzes and chisels, made of jade, granite, and basalt. "The magazines are generally about 20 ft. to 25 ft. long by 10 ft. to 12 ft. broad. In the interior there is a row of posts, which support the ridge-board of the roof. In the second magazine, where the savages keep their food in common, we found sacks of potatoes [the *kumara*, or sweet-potato, is here meant]; bundles of suspended fern-root; various testaceous fishes, cooked, drawn from the shell and threaded on blades of rushes, and hung up; and an abundance of very large calabashes always kept full of water for village use. This storehouse is almost as big, and of the same shape, as the magazine-house. The third storehouse contains the rope, fishing-lines, the flax for making rope, thread and rushes for making string, an

immense quantity of fish-hooks of every size from the smallest to the largest, stones cut to serve as lead weights, and pieces of wood cut to serve as floats. In this warehouse they keep all the paddles of their war-canoes; it is there that they make their nets, and when they have finished one they carry it to the extremity of the village. . . . These public storehouses as well as the private houses are made of timber, well squared, and fastened by mortise and tenon, and pinned together; they are generally oblong in form. Instead of planks for the walls of their houses they make use of well-made straw matting, which they ply doubled or trebled one on top of the other, and which shelter them from wind and rain. The straw mattings also serve as roofs to the houses, but in this case they are made of a sort of very hard grass which grows in the marshes, and which the natives manipulate with great skill."

The third storehouse described by Crozet is equivalent to one known as the *whare mata* among the Tuhoe Tribe. This was a special building erected and set aside as a storehouse for all implements and material connected with bird-snaring and fishing, and in which such apparatus or implements were made. This building was held to be *tapu*, and no cooked food was allowed to be taken into it, nor were women allowed to enter it. Men engaged in making bird-snares, &c., in this building for the opening of the fowling season were *tapu*, and were not allowed to live with their families until their tasks were completed and the *tapu* lifted from them. The Ngati-Raukawa Tribe had a similar building in their hamlets. Some account of the *whare mata* may be found in Volume xlii of the "Transactions of the New Zealand Institute," page 445.

J. L. Nicholas, who sojourned in the northern part of New Zealand in 1814–15, remarks on the superiority of the storehouses of the natives to their dwellings: "The inhabitants, to preserve their winter's supply of food, had built a good many storehouses, which were better constructed and much more commodious than their dwellings. I observed one particularly that was as well built, both in point of comfort and convenience, as any of the huts of New South Wales that serve as a residence for our people. It had a door spacious enough to admit a person through it without stooping—a plan that I am surprised they neglect in their dwellings, where ingress is so difficult through the narrow apertures that it is always a laborious task to attempt it. The roof of this storehouse projected more than 3 ft. from the walls, forming a veranda round the dwelling; and to admit a free circulation of air they had made in it two large openings. The interior of this structure was also well planned, and partitioned into two convenient apartments. The door-frame was a curious specimen of the progress of their attempts in carpenters' work; the top and bottom of the frame were mortised to the

sides and pinned very firmly, and from the sides projected a strong ledge, through which they had cut two holes for the bolt that served as a fastening to the door. Round the house was a paling, that stood about 10 ft. distant from it, and was formed, like the rest, of strong stakes."

In Polack's "New Zealand: a Narrative of Travels and Adventures, &c.," published in 1838, is given an illustration of one of these storehouses with a fence round it. Like most of the illustrations in the above work, it does not bear much resemblance to Maori work, but has one notable peculiarity: this consists of the shape of the door, which is much narrower at the top than at the bottom. Of such buildings the author says, "The house appropriated to the *kumara*, or sweet-potato, is built expressly of the *raupo* with exceeding neatness. These have sometimes a veranda all round the building, and are enclosed with a neat fence; the doors are large, neatly carved, and painted. These entrances are often formed in the Egyptian style—narrow above, and widening as it descends; a small figure also surmounts the doorway." The illustration shows a ground-line storehouse, not an elevated one. See also Archdeacon Walsh's account of similar stores, at page 21. The so-called "veranda all round" was simply the projecting eaves at the sides of the building, and the roof-gables at the two ends.

Williams's Maori Dictionary gives "*Patengitengi*, storehouse for *kumara*"; but whether it be an elevated, subterranean, or ground-line store we know not.

Nicholas, whose writings were published in 1817, speaks of having seen a circular storehouse in the Hauraki district: "On the side of the hill was a fine plantation of potatoes, cultivated with their usual neatness, and in the midst of it two very comfortable huts, with a singular building, probably intended for a storehouse. This strange edifice was built in a circular form, with the roof projecting about 3 ft. from the sides." This building was also surrounded with a fence, but such fencing was probably a modern innovation, practised since the introduction of pigs.

After the trade in flax was inaugurated, the natives in the Northern Island sometimes constructed large houses or sheds in which to store the prepared fibre. Polack states that some of these storehouses were "above 100 ft. in length, 30 ft. in width, and 40 ft. in height. . . . The sides of a flaxhouse are generally open, with poles only placed across. . . . Some of these houses are 40 ft. in height. . . . Great care is taken that the roof be watertight." Again, he says, "The flaxhouses (storing-places for *Phormium* fibre) in this village were nearly 80 ft. in length and 30 ft. in breadth. They were constructed of poles and *raupo*, and the lower parts were open, with only poles placed across."

Marshall, in his "Narrative of Two Visits to New Zealand," speaks of a curious form of storehouse as seen by him in the Ngati-Ruanui district of

Taranaki in 1834. In describing the Wai-mate *pa*, which contained nearly two hundred huts, he says, "In the samples they afforded of the domestic architecture of the New-Zealanders, there was little remarkable when contrasted with the similar edifices of the northern tribes, except that they appear to have been constructed with more nicety and carefulness, and with great attention to beauty of appearance. They were divisible into four varieties: (1) The *whare mahana* (warm, or sleeping, houses); (2) the *kauta* (cookhouses, or kitchens); (3) the *maua* (?) (open, or store, houses); (4) the *whata* (or wood-houses). The *maua* (?), or open houses, are so called either from a small opening in addition to the door, or from the wall at one end only reaching half-way across the building, and thereby leaving a wide entrance to the space within, beyond which there is occasionally an inner and sleeping apartment. These houses are used, for the most part, as warehouses in common, where the joint proprietors may safely deposit their implements of husbandry and weapons of war, together with the few articles employed in their still-fewer manufactures."

The above term *maua*, as applied to a house or hut, is unknown to us. As the author was not a Maori linguist, and the expedition does not, on his own evidence, seem to have had a competent interpreter, it is likely enough that some error was made in noting the name of these huts. The form of these storehouses was a curious one, and if an inner apartment was sometimes partitioned off it was probably a local usage.

The *rua tairanga* was, it is said, a store built on the surface of the ground, such being its floor, no part of it being excavated. The walls were built up much as in our log huts, by crossing lengths of the tree-fern trunks, the spaces between the logs being blocked with bunches of *rarauhe* (bracken), after which earth was piled up against the walls. This usage is said to have obtained in the Wai-rarapa district, but it does not look like a Maori mode.

In some cases storehouses with raised floors were constructed, as in situations where the ground was too damp to store supplies in. Earth was piled up to form such raised floors. Occasionally storehouses with wooden floors raised a little above ground, so that the air might circulate beneath them, were used, hence these resembled low-built *pataka;* but these were very uncommon. It was not a native custom to store *kumara* or *taro* in ornamented *pataka.* Likewise stores like ordinary huts, the surface of the ground forming the floor, were sometimes used; but ever the Maori preferred to excavate pits for storing his crops in, such being semi-subterranean, or wholly so, or in the form of caves hewn out of soft sandstone or indurated pumice.

In the following account of *kumara* stores from the pen of Mr. Colenso the first part seems to refer to stores on the ground-level, which do not seem to have been used on the east coast: "The *kumara* barn or store was almost

universally the well-made handsome house of the village—the one sure to catch the eye of the European visitor, from its size, shape, neatness, and profusion of ornamental carved works inlaid with pearl-shell (*Haliotis*) and stained red. Its walls were made of yellow reeds of the *Arundo*, placed neatly together, with a squared plinth of the dark stem of the fern-tree set at the base to keep out the rats and wet, while its (thatched) roof was well secured with loosely twisted ropes composed of the airy elastic climbing-stems of the durable *mangemange* fern (*Lygodium articulatum*), and a drain cut round it to throw off the rain and other waters. Sometimes those stores were also elevated on squared and dubbed and ornamented posts, and sometimes even built up in the forks of the main branches of a dead tree."

It should here be mentioned that walls of store or dwelling houses, though often lined with reeds (the yellow flowering-stalks of *Arundo conspicua*), were yet never made of such frail material. They were merely used as a neat sightly lining for walls and roof. Also, the highly adorned *pataka* were never constructed on trees, through rude open platforms often were.

Canoe-sheds : Polack remarks, "Houses are also erected for war-canoes, the sides being generally open. The posts are made strong, for it often occurs that beneath the gable roof families dwell, who ascend thereto by means of a notched pole. These *wharau*, as they were termed, were also often used as places in which to keep fishing-nets and other items.

Carved Board from Front Wall of a Pataka.

III. PLATFORMS OR STAGES ELEVATED ON POSTS OR TREES, BUT NOT SUPPORTING ANY BUILDING, OR ONLY A ROOF; ALSO RACKS OR FRAMES, AND SCAFFOLDS FOR DIVERS PURPOSES.

These stages, used for the purpose of storing food products on, were simply platforms of timber supported by one or more posts, or by tree-trunks. The latter were sometimes constructed among the branches of living trees, and sometimes on dead tree-trunks. They were often elevated at a considerable height above the ground, and hence were not so likely to be reached by the indigenous rat. Access to them was gained by means of a pole with notches cut therein, which served as a ladder, and was taken down and laid aside, except when actually in use, lest rats ascend thereby. This

FIG. 39.—ROUGH OPEN PLATFORMS FOR STORING POTATOES, ETC., ON.

From "Voyage of the Astrolabe."]

crude ladder is termed *ara-whata*. The illustrations given will convey a very good idea of the aspect of these structures.

Darwin, who was at the Bay of Islands in 1835, says, "The villages are chiefly conspicuous by the platforms, which are raised on four posts 10 ft. or 12 ft. above the ground, and on which the produce of the fields is kept secure from all accidents."

Polack (1838) says, "The *whata* is a platform built upon trees, or raised on stout branches. These are solely used for the purpose of preserving the provisions from the damp ground, the incursions of the rats, and the insidious affections of the dogs."

Jameson, who travelled in New Zealand in 1840, describes some *whata* he saw at the Bay of Islands: "Among other articles of produce I observed three or four small stacks of wheat, which they had built upon posts encircled with pieces of wood inclined downwards—a contrivance which prevents the depredation of rats. On many of the trees, also, we observed small stages on which potatoes and *kumara* were deposited, beyond the reach of these voracious animals."

The Rev. W. Yate, in his work on New Zealand, published in 1835, remarks, "That which most strikes the attention in approaching a native village is the stores which are built at the top of the highest trees(?). They are platforms made of strong poles interlaced with twigs, and are very durable. Placing potatoes and corn at this height secures them from the rats, and also ensures to the owner the whole of his property, as no person can ascend to take it from him without being detected." In another place this writer speaks of stages "about 20 ft. from the ground, upon which are placed two or three hundred baskets of corn (maize)."

In Wade's "Journey in the Northern Island of New Zealand" (1842), we note, in his description of the fortified hamlet of Waka-tiwai, at the Bay of Islands, the following item: "In all the enclosures, and elsewhere about the *pa*, are storehouses, consisting of a platform raised upon stakes 10 ft. or 15 ft. high, on which are deposited the potatoes, &c.; and here and there are poles on which are hung bundles of dried fish, scattering their fragrance abroad." In another part of his little work the same author remarks, "One of the methods which the New-Zealanders adopt for preserving their winter stock of potatoes, maize, or *kumara* is by fixing an open framework on strong posts, commonly about 6 ft. or 7 ft. high, so as to form a stage of the required dimensions, on which the baskets of food are piled, and a rude covering or thatch put over them. These stages are called *whata*. Sometimes one thick post supports a *whata*, but more frequently four, six, or nine posts, according to the size. Sometimes you may see the *whata* with its load raised aloft among the branches either of a decayed or growing tree." The writer speaks of pitching his tent on one of these platforms in order to escape from the swarming fleas of a native settlement.

In the above extract we note that although these stages had no houses built on them, yet in some cases a rude thatch covering was put over the goods stored thereon, in order to protect them from the weather. We may also note that many of these platforms were constructed in an open manner, with spaces between the horizontal timbers, while some had close floors. The former served well for storing large items on, such as baskets of potatoes, &c.

Small islets or rocks were sometimes utilized by the Maori as places for the storage of food, as being free from rats. A low stage would be erected

on such places, on which food products were placed. Thus, a small rock islet in the Wai-rau arm of Wai-kare Moana is known as the Whata kai o Maahu (the food-stage of Maahu), because that ancestor had a food-store thereon. Another such, known as the Whata kai o Tamai-rangi, was a small sandbank or islet situated in the eastern arm of Pori-rua Harbour, where that famed chieftainess of Ngati-Ira had a food-store.

In constructing these platforms on trees advantage was taken of the branches, beams or poles being placed in branch-forks in a horizontal position, and then covered with timbers in order to form a floor. Any food stored on such places was much drier than if placed on the ground, and these elevated places were much used in situations where the dampness of the earth rendered it unwise to place food in pits.

Whata rangi: "Maori Art" gives this as a name of "a stage or platform, on two or more posts." It seems to be applied to stages used for many different purposes, and also to small elevated storehouses. Some tribes apply it to the scaffolding used in tree-felling. A Taumaru-nui native informs us that in his district the name was applied to an elevated stage erected in a village, and used as a seat or reclining-place by the two *ariki* (first-born male and female of a high chief's family). This would bring it under the head of *tapurangi*, as will be seen anon.

Williams's Maori Dictionary gives—*Komanga:* Elevated stage for storing food upon. *Timanga:* Elevated stage on which food is kept. *Paparahi:* Stage for drying *kumara* (sweet-potatoes). *Paparahuа:* A kind of table from which food is eaten (a Rarawa word). *Rara:* Stage on which *kumara* are dried. *Rangitapu:* Scaffolding for raising a ridge-pole.

The Rarawa word is of interest, inasmuch as the Maori was by no means addicted to the use of dining-tables. He preferred for such the breast of the Earth Mother, and, for manipulating his food, the *tokorima a Maui* (the five fingers).

Tregear's Maori Dictionary gives—*Kaupapa:* A raised platform for storing food; (2) an altar or sacred platform; (3) a raft. *Kahupapa:* A raft; (2) a shield, a tortoise, a sapping-shield or protection to an attacking party. *Kauwhata:* An elevated stage for storing food. *Tiro:* A food-store; a raised place for storing food. *Kaiwhata:* A pole placed on two forked sticks for the purpose of suspending food, &c., from it. *Whata-amo:* A litter.

The word *kahupapa* is also used to denote a platform such as those constructed on trees by fowlers, or a causeway made of fascines or timber, and similar items.

In "Maori Art" occurs the statement, "Near the cooking-houses would be one or more *whata* or stores for firewood, raised on posts about 6 ft. from the ground." Probably the most common method of stacking firewood was

either in conical stacks, made by leaning long pieces against each other, or by stacking short pieces horizontally at the back or sides of cooking-sheds, such stacks being termed *apaapa wahie.* The conical stacks of firewood were called *kotutu wahie* by the Whanga-nui natives, and *whakatutu wahie* by some others.

Williams gives, "*Pouraka* or *poutaka*, a platform attached to one post." Also *rara*, a stage on which *kumara* are dried. This latter name was also applied to a horizontal rack on which eels, &c., were placed, and under which a fire was kept going in order to both cook and dry them; and, in fact, to any similar contrivance used for drying things on. In like manner birds were cooked for potting by being suspended in rows from the horizontal bars of a perpendicular rack, termed a *matiti* among the Tuhoe Tribe.

Maize is dried and kept on a large rack made by attaching poles horizontally to two Λ-shaped trestles. Such poles are fastened to both legs of each trestle, so that a double rack is thus formed. The shucks are stripped from the grain, but are not severed from the base of the cob, and hence the cobs are easily formed into bundles by tying the shucks together. These bundles are then suspended on the bars of the *whata* or rack. Another form of *whata kaanga* (corn *whata*) does not properly belong to this division of our paper. It is a rough shed built on piles or posts about 4 ft. high, with open walls, often made of *manuka* brush, but with a weatherproof roof. The corn is shucked and the cobs thrown loose into the shed, where ofttimes they remain until next season. When not so filled, these *whata* are often used by natives as sleeping-places. The ventilation of such a chamber is beyond cavil. These corn-stores are, of course, a modern institution, the natives of the Bay of Islands, who were the first to acquire maize, having been provided with the grain in the "nineties" of the eighteenth century by Governor King, of New South Wales.

In former times, when canoes were housed in long sheds, platforms or lofts were sometimes constructed in such sheds, which served as sleeping-places for families.

Perpendicular racks, for drying fish on, were much used in former times by the coastal tribes. In his account of Queen Charlotte Sound Wakefield says, "Much of their (the natives') food consisted of dried whale's flesh, of which we saw large quantities hung on racks about the village." Many of us have seen such racks in Maori villages. Such racks are often termed *tarawa.*

In his account of Port Nicholson in 1839 Major Heaphy remarks, "A *pa* stood at the mouth of the Hutt River, on the eastern side, with large war-canoes drawn up on the beach, while at the hill-foot were tall stages, from which hung great quantities of fish in the process of sun-drying."

A curious form of hollow or semicircular *whata* was often seen in former times. Some of these were made of a short piece, a section, of an old canoe,

set up on the top of a tall post, with the hollowed part upwards. Others were made of the half of a short section of a hollow tree, fixed up on a post in like manner. Some thirty or forty years ago such items were a common feature in native villages. One appears in Brees's picture of the Maori village at Nga-uranga, Wellington.

Dr. Marshall, in his "Personal Narrative of Two Visits to New Zealand," which he visited in 1834, speaks of a food-storing platform suspended from tree-branches, a singular form: "The *whata* is of very varied construction, being sometimes a mere stage, lifted up about 20 ft. above the ground, upon four stanchions, and in its turn supporting the winter store of potatoes, corn, &c., all carefully covered in with a matting of reed or bulrush; sometimes a rudely manufactured raft, slung from the dead or dying branches of a decayed tree, and apparently out of reach of any common thief, answering the same purpose, and certainly giving an additional touch of the picturesque to the general character of a New Zealand village." The same writer, in describing Te Namu *pa*, mentions "several *whata*, or stages, supporting baskets of seed-potatoes, carefully sewed up with dried grass and covered in with fern-leaf."

To turn to the most diminutive item we have seen described as a *whata*. This was a small platform constructed in a *hangi*, or steam-oven, and on which a *kumete*, or wooden bowl, was placed. The whole was then carefully covered, and so the water was brought to boiling-point. (See Bulletin No. 3 of the Dominion Museum: Dr. Buck's paper on Maori weaving.)

Whata karaho: This was a term used to denote an elevated platform, open and roofless, with four supporting-posts. It is apparently synonymous with *rahoraho*.

At the *tauranga waka*, or place where the canoes of a hamlet were kept and hauled up on returning from a fishing expedition, a platform was usually erected, on which the fish were laid, head and tail, by the women as they cleaned them, and after this task was completed such fish would be carried by the women to the village. These tasks were always performed by the women on the return of a fishing-party.

Whata papa does not seem to have been a specific name for any particular kind of platform or raised hut, or one used for any particular purpose, but the expression simply implies a raised place constructed of *papa*, or hewn slabs.

In Bishop Selwyn's journal of his travels in New Zealand occurs the following passage, showing how much struck he was with the appearance of the lofty platforms erected at native villages. Those described were seen on the second day's march south of the Rakaia River: "January 13, 1844. Arrived at a native settlement, Te Wai a Te Rua-ti, standing out of the plain like an oasis of the desert. Its lofty *whata* (potato-stores) standing up against

the sky, by the aid of a little imagination, suggested the idea of the ruins of an ancient temple."

A *whata kupenga*, or net-rack, on which large fishing-nets were hung to dry, usually consisted of two horizontal and parallel rails fixed on the top of posts, and about 8 ft. or 10 ft. apart. The nets were spread over these racks to dry and then put away in a *pataka*, in which were stored all forms of fish-nets and traps, such as *purangi*, *tawiri*, *hinaki*, &c. Such a raised storehouse for nets was often called a *whatanga tawiri;* for it must be borne in mind that the word *whata* is not only a noun, but also a verb, meaning "to elevate." A fish-drying rack was termed a *tarawa* or *whata ika.*

An elevated platform, with a roof over it, but no walls, was used for the purpose of drying fish, and was termed a *wharau.* In modern times leaves of the tobacco-plant have been placed in such places to dry.

Whata with two or three floors: In an illustration of an old-time Maori fortified village are depicted two *whata*, each of which has three floors or stages. On these stages are piled baskets of food products, while from the outer edges are suspended rows of dried fish. Each *whata* is supported by four posts, which in one case are carved on their lower parts. The same picture shows such a stage with two floors or platforms; and another such stage appears in an old sketch of a place near Nelson.

Te Whatahoro, of Wai-rarapa, has never seen or heard of any *whata* or open platforms with two floors. Such a thing would be looked upon in his district as unlucky, simply because it would be an innovation. "*Kia heke iho ra i nga tupuna, katahi ka tika*" (Were it a mode handed down from our forefathers, then it would be correct).

A crude arrangement used at temporary settlements or camps, and known as a *whata kura*, is described by Te Whatahoro as being simply a small tree taken up with roots attached, and the stem cut off perhaps 8 ft. or 9 ft. above the ground. This was then set in the earth with the roots upward, whereupon the roots formed a convenient place to put baskets of potatoes or other items on. Such rude erections were used by women in camps in open country. When camped near trees, a platform would be constructed among the branches of a small tree. The *ake rautangi* tree was favoured as a *whata kura* at a place periodically visited, such as a fishing-village, on account of its durability.

The following items were also given by Te Whatahoro:—

Whata pu kiore: This was a carefully constructed raised platform, on which were placed bodies of the dead intended to be eaten. The four horizontal side beams of this structure, on which the platform rested, were carved with the pattern termed *pu kiore.* This pattern is seen on the sides of canoes of a superior type. These carved beams were termed *huapae*, a general term

for beams, &c., in a horizontal position, and not by any means a specific term. [This definition of the above term differs from those given by other tribes, and we look upon it with some doubt.]

Whata kaupe: A rough, raised platform, supported on four posts, and used as a place whereon to put eel-pots, &c., to dry, to keep baskets or other items; a generally handy place.

The series of racks consisting of two upright posts and a horizontal cross-piece, over which a heavy ridge-pole was slid into position, was termed a *kaupae* or *amorangi*.

Tunui-a-rangi, of Wai-rarapa, states that a curious form of *whata kai* was erected at the *taumata korero* of a *pa*—that is, at the place where the elder chiefs assembled in order to discuss affairs of the clan. This form of *whata* was simply a small tree, which was felled, conveyed to the hamlet, and set upright in the ground. The branches were not cùt off—that is, a number of branches were left on the trunk, one for each member of the party that was wont to meet at the spot. Doubtless the ends of such branches would be cut off, leaving a certain length thereof projecting whereon to hang baskets. The trunk of such a *whata* was carved in some fashion, and painted with red ochre. Attendants would bring food for the assembled council, and, after the meal, any remains of such meal were put in baskets which were suspended from the branches of the *whata*, each man's leavings being placed in a separate basket and hung on the particular branch assigned to him. This custom was, of course, in observance of the law of *tapu*. Any person interfering with such food would be slain.

The Tahitians erected within their houses a curious form wherefrom to suspend divers vessels. Ellis says, "The *fata*, or stand, with one or two projections, and a notch on the top, from which the calabashes of water, baskets of food, *umete*, &c., are suspended. Great labour was formerly bestowed on this piece of furniture, and the *fata pua* was considered an ornament to the house in which it was erected. About a foot from the ground a projection extended 6 in. or 8 in. wide, completely round, flat on the top, but concave on the under-side, in order to prevent rats ascending and gaining access to the food."

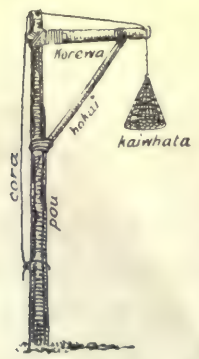
Platforms for stacking firewood on were termed *rahoraho wahie*, says Te Whatahoro. These were platforms placed on four or more posts about 5 ft. high, having no roof, but merely three or four uprights at each end to confine the stack of wood, the pieces of fuel being of irregular lengths.

A stack of firewood stacked as we "cord" up fuel would be termed a *taiki wahie* in the Wai-rarapa district. When placed on end so as to assume a cone-like form, such is termed a *whakatutu wahie* or *kotutu wahie*. Firewood thrown into a loose heap would be a *haupu wahie*. The expression *apaapa wahie* is applied by some tribes to firewood stacked as the *taiki* above mentioned,

while others apply it to fuel stacked in and supported by slings of *aka* (tough stems of climbing-plants). These slings, or pieces of *aka*, were secured over the doorway inside the front wall of a sleeping-house, says Te Whatahoro, arranged so as to bow out like the letter D, and the pieces of fuel were arranged in these loops. This was all good fuel selected for the little fires kept burning in the *takuahi*, or fireplaces, and might not be taken for cooking purposes. Fuel was also stacked in the *apaapa* or *taiki* style in cooking-sheds. In the Matatua district the suspended slings for fuel seem to have been affixed to the back wall of a sleeping-house, not over the door.

Another method of stacking fuel for a cooking-shed was that known as a *pahuki*. This mode implied the stacking of fuel lengthwise along the inside walls of a cooking-hut. To keep such a stack in position, two upright poles were used to confine it, having the lower ends inserted loosely in the ground, the upper ends being hitched to the wall-plates or outer posts by means of cords. Thus, when taking out a long piece of wood from the stack, one of the upright poles could be untied and inclined outwards from the stack in order to facilitate the process. These movable uprights are called *pou whakaawe*. In this method there are no close walls to the hut, walls being represented by a few upright posts to support the roof, and which serve to confine the stack of fuel. As the fuel on the inner side of such a stack was consumed, that on the outer side was moved inwards, and occasionally a fresh supply replaced that taken from the outer part of the stack.

The *kaiwhata*, explains Te Whatahoro, was a small receptacle for food that served the purpose of the safe or meat-safe of the European, and was suspended from a high gallows by means of a cord. It was constructed as is a *hinaki*, or eel-pot, the framework consisting of many wooden hoops made from pieces of *aka*, the tough pliant stems of climbing-plants. These hoops were of different sizes, the largest thereof forming the base of the *kaiwhata*, the others diminishing in size upward until the topmost one was merely a diminutive item; thus the apparatus was cone-shaped. Small straight pieces of *aka* were fastened to these hoops (*whiti*), much as an eel-pot was made. The bottom was of similar material, and was often a separate piece that acted as a door, being secured to the body of the apparatus by tying. The food to be so preserved from rats and birds was placed on this circular base, then the cone-shaped structure was placed over it and tied thereto, while a cord secured by one end to the upper or small end of the cone served to suspend it. In some cases a bowl containing certain food was placed in such a safe.



This apparatus was hoisted up to an arm projecting horizontally from the top of a high post, about 20 ft. in height, it is said. This upright post had

a notch on the top, and just below its summit was secured the *korewa*, or arm, which was butted on to the post and secured thereto by means of two horizontal battens, about 2 ft. in length, placed one on either side of the post and arm, and lashed securely to both. A brace or strut extending from the post upward to the arm also served to hold the latter in position. At the outer end of the arm was a notch similar to that on the top of the post. The cord, one end of which was secured to the upper part of the "safe," passed up through the notch on the end of the arm, then along above the arm and through the notch on top of the post, thence down to the ground, whence it was manipulated, and by which the cage-like structure could be drawn up to a desired height and left suspended from the end of the arm. The running of this cord through two rounded-off notches, and the passing of a rope over a round piece of timber in order to gain a purchase, were about the nearest approach to a block and pulley evolved by the Maori.

When the above apparatus was used in wet weather, and it was desired to protect the food contained in it, then a rude cover, termed a *poreku*, was made for it. This cover was in the form of a hollow cone, and was made of pieces of *rangiura*, the inner bark of the *totara*. These pieces of bark were cut into the desired shape while still green, and also pierced with holes for sewing them together, then tied to pieces of stick laid across them, and allowed to dry. When dry and rigid they were sewn together, their edges overlapping, by means of reeving a light cord through the pierced holes. Thus a conical cover to place over the *kaiwhata*, or safe, was formed.

Both platforms (food-stages) and *pataka* were occasionally built in water, such as lakes and ponds, not only to avoid rats but also human thieves. In the Wai-rarapa district *pataka* were sometimes built in ponds, and in such places valuables were often kept.

Platforms were often erected among the branches of living trees adjacent to a hamlet, and used to store food-supplies, &c., on. Occasionally such trees stood within the defences of a *pa*. In some cases notched poles were used whereby to gain access to these stages, and in others the *arowhata* was employed.

In the Wai-rarapa district the *tokorangi* or *kautawa* was a simple apparatus for hoisting meat up out of the way of dogs, &c. The *tokorangi* was composed of two poles set up in the form of an inverted V (so, Λ); the butts sunk in the earth, the tops crossed and lashed together. Across these two sticks, near the apex, was lashed a short cross-piece, the middle part of which was round and smooth, and over this the rope working the apparatus was passed. The item to be hoisted, such as a piece of meat, was

secured to a short bar of wood; if a side of pork or man, simply laid over it. Short cords were fastened to either end of this bar, and to these another short cord that suspended the bar to the end of a long pole. To the upper end of this pole was secured one end of a long cord that passed over the cross-piece of the *tokorangi* and thence to the ground. Pulling this cord over the smooth round cross-piece hauled the upper end of the free pole upward, when it was left at an angle of perhaps 60°. Thus the food was suspended from the free pole, which was itself suspended from the *tokorangi*.

Fern-roots were sometimes placed on open platforms, exposed to all weathers, until dry, then packed in baskets and put away in the cooking-huts.

The posts supporting platforms, &c., on which food was stored were worked smooth of surface in order to prevent the passage of rats, or a hole the size of the post was made in the centre of a sheet of *totara* bark, which was slipped down over the post before the superstructure was erected, and fixed at a point some distance above the ground. This preventive was termed a *matapara whata*.* These items were also fixed on posts supporting *pataka*. In some cases these *matapara* were formed of a hewn slab of wood, with a hole in the centre to admit the post. In other cases wooden troughs, termed *waka*, were placed, hollow downwards, on the top of the posts, where they served as foundation-plates for the superstructure. Such troughs were not canoe-shaped, but open at both ends. Again, such plates sometimes consisted of a broad flat hewn slab fixed on the tops of the supporting-posts. All these items prevented the passage of the native rat, but it is probable that it was not such a persistent and destructive creature as the Norway rat.

The following brief remarks on the subject of platforms are from Tuta Nihoniho, of the Ngati-Porou Tribe:—

Whata—i.e., common food-platforms—never received special names, nor was there any carving on them.

In modern times a *whata* or platform, with two or three floors, one above the other, but with no walls, has sometimes been used whereon to store seed-potatoes (but never *kumara*), the same being usually placed in round creels made of split supplejack, and termed *toi* (*toiki* by some tribes), a thatched roof generally placed over the uppermost platform. Such a construction is termed a *whata purapura*.

Fern-roots (*aruhe*) were piled for drying purposes on a rough raised platform some 6 ft. high, having no roof. This would be termed a *whata aruhe* simply because it was used for such purpose.

Rahoraho: This term would be applied to the platform or decking in a canoe, also to a floor of slabs or other materials laid on the surface of the

* Dieffenbach mentions a cone-shaped island in Queen Charlotte Sound named Matapara.

ground. If so laid on the ground as dunnage to protect something placed on it in the way of keeping it off the ground, it would probably be referred to as a *whakapuru*.

Eel-fishers sometimes erected a raised platform at the edge of a lagoon, or pool in a swamp, from which to fish, a basket being attached to the structure into which to put their catch. Such a platform would be termed a *puhara hi tuna*, or eel-fishing platform (or stage), the term *puhara* being applied to an elevated platform only.

The term *kahupapa* is applied to many things, as an elevated floor or platform, a raft, a corduroyed road, &c.; also to the *toetoe* lining of a house-roof and the ornamental work between the posts of a house, because both are put together on the ground in wide sections ere being placed in position.

Timanga, as a name for an elevated storage-place, is apparently a northern word, and is not so employed by the east-coast peoples.

Occasionally a platform elevated a little above ground was seen at the side of the *marae*, or plaza, of a village, and on which the elderly men would sit at such times as in the evening when the young folk were amusing themselves on the plaza.

Racks: Fish-drying racks were termed *whata ika* or *tarawa ika*.

Arowhata and *arawhata:* A form of ladder, says Te Whatahoro, termed an *arowhata* was used in former times whereby to gain access to platforms used by fowlers in trees, to lofty platforms or *pataka*, or to tree dwellings, such as the *whare punanga*. These ladders, being constructed of flexible materials, were hauled up when necessary by means of a cord fastened to the lower end, thus cutting off access to the tree or platform. The *arowhata* was constructed in the following manner: Two long pieces of *aka*, the pliant stems of certain climbing-plants, were used as sides of the ladder, and across these were fastened the steps, *kaupae* or *kaupeka*, pieces of *aka toro-raro*, tied on with thin stems of *aka-kuku* or of *mangemange* (*Lygodium articulatum*). The tie was first tied round the upright, then the two ends of it passed round the step-piece in opposite directions and crossed on the step, then reversed and brought back round the upright or side piece of the ladder and secured. Long ladders of this description were used for ascending trees, and smaller ones for *pataka*.

The form of *arowhata* that was pendant was called *arowhata taepa*, but in some cases they were lashed to the trunk of the tree, in which case they were termed *arowhata tamau*. These latter could not, of course, be hoisted up.

Arawhata: The ladder more commonly used for *pataka* and platforms was the *arawhata* or *turuki*, which was usually a beam or length of the trunk of a tree, about 8 in. in thickness, in which a series of steps had been cut. In some cases a ruder form of ladder was used—a stout pole, the branches of

which were cut off perhaps 6 in. out from the trunk, and utilized as steps. Such ladders as these were never secured to the platform or *pataka*, but were always removed after use and laid aside, thus rendering the store inaccessible to such noxious creatures as rats, dogs, and children. The notched-pole ladder is termed *turuki* on account of its notched steps.

Hakari stages: The term *hakari* implies a feast or entertainment. These feasts were fairly common occurrences in Maoriland in former times, and often were of a ceremonial character. In many cases the immense quantities of food presented to visitors at these meetings, or at such of them as were remarkable for the inclusion of extra-tribal guests, or were of a political nature, were stacked up on high erections composed of a number of platforms one above the other.

These many-floored stages were of two very different forms. One was pyramidal, and was built by setting up a stout tree-trunk in a vertical position and then placing strong rickers in position, their butts being planted far out from the central post, and their tops resting against it, where they were secured by strong lashings. The platforms were now constructed by lashing rickers in a horizontal position on the framework, and on these horizontal beams the pole flooring was laid. In Yate's "Account of New Zealand" (1835) is an illustration of one of these conical erections which has fifteen platforms, on each of which there is room and to spare for men to walk upright without being in danger of knocking their heads against the floor above. This would mean a height of about 100 ft., which seems very great, and must be an exaggeration. The author says, "A large number of strong poles are erected, and stages are made at a distance from each other of from 8 ft. to 10 ft., till they reach the top. Sometimes these piles are from 80 ft. to 90 ft. high, and from 20 ft. to 30 ft. at the base, gradually rising to a point; when filled, they present one solid mass of food. The whole is decorated with flags, and, when in an elevated situation, presents a very imposing appearance. The portion belonging to each tribe is particularly pointed out; and when the ceremony of presenting it is over, the people carry away their portions, and the building, upon which it was all piled, is left to go to ruin or cut down for firewood, as the natives never use the same wood, nor choose the same spot, for a second *hakari*."

The illustration of this curious pyramidal staging, or series of platforms, given in the above work is of much interest. Men are stationed in numbers on each platform, engaged in the task of hoisting up baskets of food from one floor to another throughout the series of fifteen floors. Each basket was pulled up separately by means of a cord attached to it, passed on from floor to floor until it reached its destination, where they were all stacked up neatly, until each stage or floor was a solid mass of baskets of food. The illustration

also shows a tall tree-trunk or isolated ricker near the stage, which was probably used in place of shear-legs in the erection of the staging or central pole.

Mr. Colenso gives some description of these stages in Volume xiii of the "Transactions of the New Zealand Institute." "The food was generally piled

FIG. 40.—A HAKARI STAGE.

From Yates's "An Account of New Zealand."]

up in the form of a pyramid, from 80 ft. to 90 ft. high, and 20 ft. to 30 ft. square at the base, gradually rising to its apex. To build up this, the straight trunk of a large tree was first obtained from the forest, and dragged out with no small difficulty to the spot fixed on for the feast; there it was disbarked,

or dubbed down, and set up; other strong poles were then set up around it; a series of horizontal stages were then made all round the scaffolding at from 7 ft. to 9 ft. apart, and the whole was filled in and built up with food packed into baskets, presenting when finished one solid mass of food. The getting-up of one of those feasts always took a long time, often more than a year."

Of these *hakari* stages, Taylor remarks in "Te Ika a Maui," "Sometimes a number of poles were planted in the ground, 50 ft. or 60 ft. high, which were made to support eight or ten stories, heaped up with baskets of food to the very top."

The other form of *hakari* stage was of a very different shape, and a good illustration of one is given in Thomson's "Story of New Zealand," Volume ii,

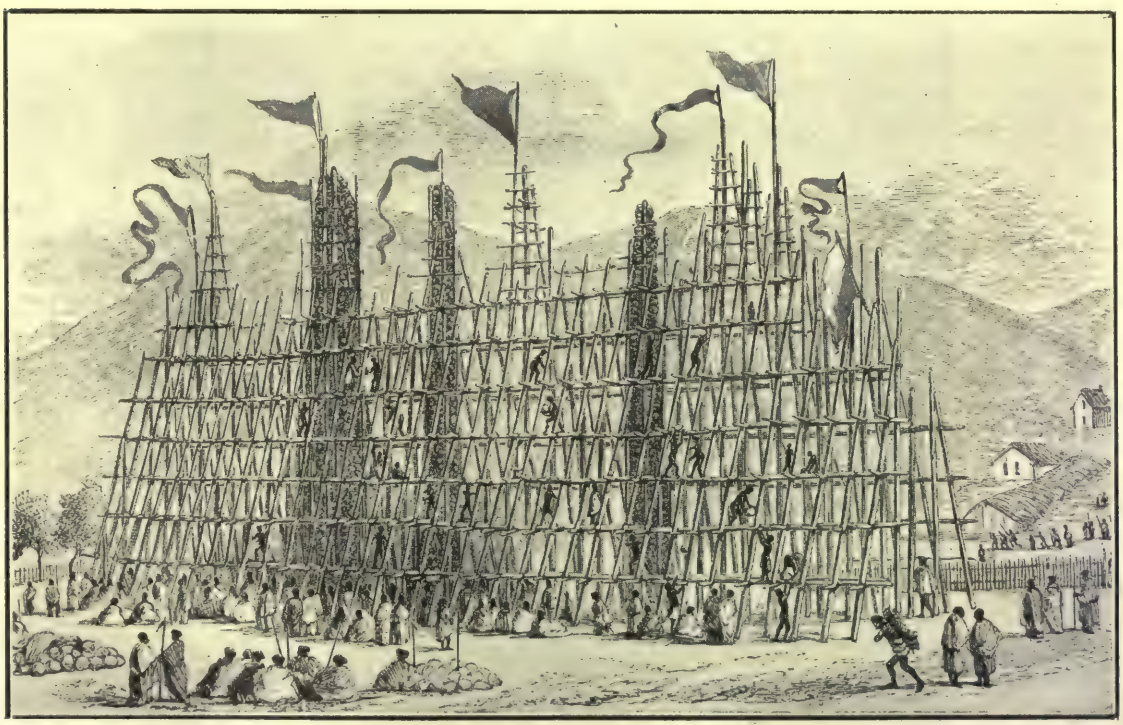


FIG. 41.—A HAKARI STAGE, BAY OF ISLANDS.

From Thomson's "Story of New Zealand."]

as a frontispiece. The staging so depicted was erected at a great feast held at the Bay of Islands in 1849, in order to celebrate the peace-making between the two races. This picture shows a long erection, not a conical one, but of a long form. The two rows of poles or rickers are inclined inward so as to meet at the top, and the whole seems to be braced and stiffened by means of erecting vertical poles in the middle of the structure. The picture shows seven platforms, about 6 ft. apart, and the erection appears to be about 150 ft. long. Men are shown at work on the platforms, and three central uprights seem to have baskets of food piled round them to the very top.

In Volume i, page 189, Thomson makes the following remarks concerning these feasts and stages: "Twelve months before the festival food was planted, and preparations made for it. Previously to the arrival of the guests the food was piled either on the ground or on wooden scaffolds. Such erections were square pyramidal towers, having an elevation of 50 ft., or ranges of 6 ft. high, extending from half a mile to two miles (!). There were several compartments in these receptacles for food, each being filled up with sweet-potatoes, *taro*, maize, fern-root, potted birds, dried fish, *karaka* berries, and other things. . . . Six thousand guests have been counted at such banquets. . . . The wood of the banquet building was used by the guests to cook their food. . . . In 1836 there was a celebrated *hakari* at Matamata, on the Thames. Here a European counted eight thousand baskets of potatoes, five hundred thousand eels, eight hundred pigs, and fifteen casks of tobacco." The statement that these stages were made from half a mile to two miles long is, of course, absurd, and cannot possibly be accepted.

The following description of a *hakari* staging erected at Hokianga, was written by the late Colonel McDonnell: "The scaffold which was to support the piles of food was six *kumi* long (a *kumi* is 60 ft., so the total length was 360 ft.). Each scaffolding was one *kumi* in length, and tapered up from its base, which was twice the stretch of a man's arms (about 12 ft.), to 40 ft., 50 ft., 60 ft., and 75 ft. in height, according to the strength or amount of food the *hapu* (division) of the tribe it belonged to had, and tapered off at the top to about 18 in. broad. On the bottom tier would be about 600 baskets of *kumara* (sweet-potatoes); a strong platform was lashed over this to support the next tier of, say, 500 baskets; then another platform, and so on, until a single row of baskets graced the top of the pile. In all, to each piece of scaffolding there would be between 3,000 and 3,500 baskets of *kumara;* here and there would be calabashes of preserved birds—pigeons, *tui*, *kaka*, *weka*, *kiwi*, curlew, ducks, and widgeon; fish of all kinds, tons of them taken in immense tidal bag nets, 70 ft. long by 25 ft. square at the mouth, narrowing off to 18 in., an immense basket capable of holding two hogsheads fastened on the other end, &c."

Of the presentation of these masses of food-supplies to the guests, this writer says, "The next day the feast was 'called'—that is, each piece of scaffolding was formally handed over to a *hapu* of Ngati-Whatua by a corresponding *hapu* (clan or subtribe) of the Popoto folk, and this was subdivided again and again until all the food and delicacies were distributed."

A peculiar mode of piling up food-supplies was practised by the Tongans. Mariner describes such as having been seen by him at a ritual feast: "Tuitonga's *marly* (? *malae* or *marae*) is near his own residence, and on this were erected four columns of yams in the following manner: four poles, about 18 ft. long, were fixed upright in the ground to the depth of a few feet, at about 4 ft. distance from

each other in a quadrangular form ; the spaces between them, all the way to the top, being crossed by smaller poles about 6 in. distant from each other, and lashed on ; the interior of this section being filled up with yams as they went ; and afterwards other upright poles were lashed on to the top with cross-pieces in like manner, still piling up the yams ; then a third set of poles, &c., till the column of yams was about 50 ft. or 60 ft. high, when, on the top of all, was placed a cold baked pig. Four such columns were erected, one at each corner of the *marly*."

In many cases, however, no staging was used, the food being piled in long heaps on the ground. So far as we can ascertain, these stages were seldom used on the east coast and in the southern parts of the Island, nor have we heard of them in the Whanga-nui and Taranaki districts.

Mr. Skinner informs us that the *hakari* stages, as depicted by Yate and Thomson, were not erected by the Taranaki natives, who followed the *tahua* system practised on the east coast, wherein the food was piled on the ground in long heaps.

Te Whatahoro informs us that among his people a *hakari* stage would be termed a *whata kopiha kai*, the platform of which was constructed of poles laid side by side. It might have side walls of plank or *rangiura* bark. On this stage the baskets of food were stacked, and in bad weather would probably be covered with mats called *topaki*, made of leaves of *Cordyline*, which overlapped each other so as to prove an excellent water-shedder. The butts of the leaves were placed outwards, and the mat somewhat resembled a rough *pora* or *whakatipu* cape in its aspect. So far we have not noted any proof that the large *hakari* stages with many or several platforms or floors were used in the southern part of the Island.

The expression *kopiha kai* was often applied to a quantity of food heaped or stacked on the ground, while a *rua kopiha* is a pit store for food products, such as crops.

It must be remarked that the *hakari* stage was not a common usage, but confined apparently to the more northern tribes. Among others, as we have seen at Whanga-nui, Poverty Bay, and elsewhere, the food-supplies for presentation to guests at these functions were stacked in a long heap or row on the ground-line, such a heap being known as a *tahua*.

IV. SEMI-SUBTERRANEAN FOOD-STORES; ALSO PITS AND CAVES.

These places are known collectively as *rua kai*, or food-pits, but, as seen by the heading above, are of different forms. They may be subdivided as follows:—

1. Semi-subterranean stores on level land. (Floor excavated; securely roofed.)
2. Rectangular excavation in hillside or on the brow of a terrace. (Earthen walls; well roofed.)
3. Excavated pits, entered through hole on top. (Covering for entrance-hole, but no artificial roof.)
4. Caves (in most cases artificial; entrance in front).

1. Semi-subterranean Stores on Level Land.

The only form of Maori store that has been made prominent in published accounts of Maori life is the highly adorned *pataka* or elevated house-like store. It is well to again mention that these ornate buildings were not only not used as places of storage for crops, but that very few of such places were seen in native villages. A Maori hamlet in pre-European times might contain one such building, many of them did not possess one, and few could boast of several. On the other hand, the common, plain, unadorned *pataka* were much more numerous, and each family might aim to possess one such.

But the most numerous items coming under the head of "storage-places" were certainly pit stores, semi and wholly subterranean, as also elevated platforms with no building erected thereon. These excavated storage-places were a truly remarkable feature in Maori village life, and the places wherein their main crop was stored. These places are not ornate structures, and have never been thoroughly described, having possibly been looked upon as being of too humble and non-striking a nature to call for any special remark. But they were the most useful of all native stores, and hence are herein described with detail that may seem tedious to the reader. The common, unadorned, or slightly ornamented *pataka* or *whata* was used for the storage of certain food products and for miscellaneous items, but the heavily carved *pataka* was a *rara avis*, and can scarcely be described as a food-store.

The style of *rua* now under discussion may be termed semi-subterranean, inasmuch as it was made by excavating earth (on level ground) to a depth of 3 ft., and sometimes 4 ft. or 5 ft. This excavation was of an oblong form, and was covered with a Λ-shaped roof. In some cases the earth walls were lined inside with slabs of wood, or, when procurable, slabs cut from the

trunks of tree-ferns. When the smaller stems of such species as *Dicksonia squarrosa* were so used they were simply "flatted" on two sides. Larger stems could be split down the middle. But the most highly prized species for such work is the *wheki-ponga* or *pu-nui* (*Dicksonia fibrosa*). The thick trunks of this species are, as Mr. Cheeseman describes, "everywhere thickly coated with matted fibrous aerial rootlets, giving it a diameter when mature of from 1 ft. to 2 ft." These thick trunks furnish fine broad slabs for the lining of the walls or roof of the food-pits. Such pieces are sliced off the trunk of a desired length, and, as the peculiar material does not break easily, are easily conveyed from a distance to the place where they are to be used, without suffering any injury. This material is preferred to ordinary timber for such covering purposes, for the reason that it withstands the attacks of marauding rats, which creature does not seem able to penetrate it. We have often noticed in the forest attenuated-looking trunks of this tree-fern carved into curious forms, where natives have been hewing off slabs of the fibrous material. When a food-pit was roofed with this material it really served as a lining to such roof, being covered with a roof of thatch or bark, which is a durable material and a good water-shedder.

When travelling from Rua-tahuna to Te Whaiti in January, 1842, Mr. Colenso descended the Okahu Stream, and remarks in his journal, "On the banks of this river I also saw specimens of a fine arborescent fern (*Dicksonia fibrosa*) which attains the height of 18 ft.; its caudex is very bulky, and is composed of thick layers of fibres, resembling at first sight the fibrous interior of the husk of a coconut. The trunks of the larger ones were grotesquely hewn by the natives into all manner of uncommon shapes, in their cutting away the fibrous outside for the purposes of planks for their houses and stores, it being more easily worked than wood, and forming a better defence against rats."

Angas remarks that the roots of tree-ferns "are used by the natives to cover over the entrances to their potato-stores: these are sunk in the ground, the porous nature of the root imbibing the superabundant moisture from above." It is doubtful if the roots of tree-ferns were ever much used for this purpose, unless aerial roots are meant.

The bark of the *kahikatoa* or *manuka* (*Leptospermum scoparium*) is much prized for this purpose. It is very durable and easily accommodated to any form of roof, while the natives possess the knack of arranging it on a roof in a very neat manner. Bark is kept in place on a roof by placing poles on it, such poles being lashed to the framework at the ends of the hut.

These stores were made in many sizes up to 25 ft. in length, and even longer. Favoured situations for them were near the edge of a terrace or on the summit of a spur, such places being better drained than others. Near

some of the old fortified villages rows of such storehouses have been made on convenient ridges. There is a row of about nine on a ridge near the old Haukapua *pa* at Rua-toki, some of which are nearly 30 ft. in length. Of course, nothing but the excavations are left, all sign of woodwork having perished long ago, but some of these excavations are now 5 ft. below the level of the adjacent land. Hence one descended several steps in going down into such places.

The end walls were made in a similar manner to side walls, preferably of slabs of tree-ferns. In many cases the roof was covered with earth.

Most of the larger or more famous storehouses, both semi-subterranean and *pataka* or raised stores, received special names, as dwellinghouses did.

FIG. 42.—A RUA KAI OR FOOD-PIT, EAST COAST.

Thus famed stores of the Tuhoe folk included Tuhua-katere, at Rua-toki; Te Wai-mana kaku, at Te Wai-mana; and Te Hau-o-Puanui, the store of the Nga-Potiki chief Te Rangi-monoa, at Karioi. Anent this latter store, the local folk have preserved the saying, "*Ma te Hau-o-Puanui e whakahoki mai.*" It appears that the above chief's wife eloped with another man one fair morn, some two centuries and a half ago. Rangi was urged to pursue the sinful twain, to slay the man, and bring his wife back. It was then that Rangi made the above remark, "The Hau-o-Puanui will bring her back." He opined that ere long she would return to the well-stocked food-store of that name, and we believe she did so.

As observed, some of these food-stores were of considerable size, and would contain a great quantity of food. In the district of the lower Whakatane valley there is an old-time saying extant, showing that such places were constructed with the ridge-pole consisting of four pieces of timber, which would mean a large storehouse. "*Tikina ki waho ki te Whanau Pani hai mahi i te rua, kia toru ai hono o te rua*" (Go out and procure the services of the Whanau Pani to construct the store, and let it be made with three joints [in the ridge-pole]). Whanau Pani was the popular name for three brothers of Ngati-Awa who were famous house-builders and wood-carvers.

In Wade's "Journey in the Northern Island of New Zealand" (1842) occurs the following: "The *whata* has already been mentioned as one form of provision-store, as also the *pataka*. In districts where the ground is pretty constantly saturated with moisture the *whata* is adopted as the preferable mode, the potato or *kumara* being liable to rot in moist underground *rua;* but in drier districts, or where the soil is less porous, the *rua* is common. There are two forms of *rua*. One form is a quadrangular hole, about 3 ft. deep, dug in the ground, with the framework of a sloping roof erected over it, and covered in with strong thatch, the entrance being by a small door in the front. The other form is a cave dug in the earth, and entered by a hole from the top, or sometimes, as at Pa-teko, from the side. At the time of our residence at Tauranga the site of the old *pa* at Te Papa was so full of underground *rua*, mostly overgrown, that it was hardly safe to walk over it."

Of the semi-subterranean storehouses Mr. Skinner says, "Sometimes the storehouses were sunk in the ground 3 ft. or 4 ft., and the whole covered with a Λ-shaped roof made of slabs, and outside them a covering of earth."

Te Whatahoro contributes the following notes regarding this type of storehouse: "The *rua tahuhu* was a storehouse formed by excavating a hole about 3 ft. deep in the earth, and then putting over it a rounded roof, and covering the same with earth. The better part of the *kumara* crop was placed in such stores—tubers selected for the purpose of cooking for guests. The two *heke ripi* (*maihi*) of a *rua tahuhu* were sometimes ornamented with notched patterns, termed *whakatatara*, but never with such carvings as are seen on a dwellinghouse, or the elaborate *pataka* carvings. Such notched *heke ripi* boards were also sometimes painted with *horu*, or red ochre, but never the plain ones. Only the store-pits of persons of importance were so treated."

The *rua whenua* seems to have been much the same as a *rua tahuhu*—an excavated pit, with the roof above the ground-level. The excavated part was sometimes lined with slabs of tree-fern (*ponga*). To roof these pits pliant poles of *manuka* were thrust down into the earth, bent over

into the form of an arch, and tied together in that position. Horizontal battens were then tied on to these poles, and the thatch lashed to these battens. The back wall was formed by inserting poles in the earth and bending their pliant tops over the rear end of the house (prior to thatching), and so lashing them. The front wall was vertical, and furnished with a small door and a *pihanga*, or, more correctly speaking, a *koropihanga*—a small opening for ventilation. When thatched the roof was covered with earth, thus leaving merely the front wall exposed. This is a Wai-rarapa form. The roof was always made with a slope; it was never flat. In the Whanga-nui district, we are told that the trunks of *Dicksonia squarrosa* were used for lining these food-pits, as well as for other purposes. Among the Tuhoe Tribe the trunks of several species of tree-ferns were used, and broad slabs or flakes of the trunks of *Dicksonia fibrosa* (*punui*) were employed wherewith to cover the roof-frame of pit stores.

When storing *kumara*, or sweet-potatoes, in such pits, the tubers are not allowed to come into contact with the slabs that form or line the walls, as such contact would cause decay to set in. The walls are lined, often with rushes, in order to prevent such contact. Many of such places had no wall-lining save rushes or fern.

The slabs or lengths of tree-fern trunks are termed *pairi ponga* in the southern part of the North Island. The *Dicksonia squarrosa* is known as *whekii* in some districts. The stems of this tree are much used wherewith to construct the walls of rough huts, as cook-sheds, &c., and such a hut is termed a *whare tirawa* among the Ngati-Pukeko folk of the Bay of Plenty. *Dicksonia fibrosa* is known as *punui* in the Matatua district, but as *whekii-ponga*, *pehiakura*, and *whekii-kohunga* in some other districts.

Some of the larger *rua kumara*, or stores, were partitioned inside for the purpose of sorting the crop and placing the different sizes, &c., of the tubers in separate divisions of the store. Some of these stores were so arranged as to have a free passage from the entrance along the middle, while partitions, termed *pakorokoro*, were erected on either side at right angles to the passage, thus dividing each side of the alleyway into several bins. In one of these divisions the small tubers would be placed; in another the *kumara tapuku*, or large rounded tubers; in another the *kumara kokau*, or long narrow tubers; and in another the *kumara mahora*, those having a smooth even surface. It was in this way that tubers were sorted for seed when the crop was stored, and this saved time and trouble when the planting season was at hand. This is an east-coast item.

2. Rua excavated out of Sloping Ground.

This style of food-storing pit was never made of so large a size as many of the form described above, for obvious reasons, except such as were

made on the brink of terrace formations. It is made by excavating a rectangular pit or chamber in sloping ground, as the side of a hill or slope of a terrace. The earth forms the walls and back in many cases, but they are sometimes lined with trunks or slabs of tree-fern trunks. A Λ-shaped roof is placed over this chamber, which, again, is often covered with earth, and a door is made in front. When potatoes or *kumara* are stored in these pit chambers the floor is first covered with fronds of *rarauhe* (*Pteris aquilina*) or *Dicksonia squarrosa*, on which they are placed. Potatoes are placed loose and heaped anyhow in such places, but much more care is taken in storing the *kumara*, or sweet-potato. Each tuber is handled separately, and carefully examined for any signs of bruise or abrasion, as such defects mean rapid decay; and all sound ones are then stacked up in rows, one by one, with the greatest care. A well-kept food-store is a striking example of care and neatness.

In all cases these pits and semi-subterranean stores are so tended that storm-water does not collect near them. In many cases small drains carry off such waters.

Tregear's Maori Dictionary gives *rua-tirawa*, a store with an "elevated floor." We do not know of any kind of *rua* with an elevated floor. Probably in error for "excavated." The tree-fern *Dicksonia squarrosa* is termed *tirawa* by the Ngati-Pukeko folk, or at least its trunk is, and a shed the walls of which are composed of such trunks is known as a *whare tirawa*.

Williams's Dictionary gives *patengitengi*, a storehouse for *kumara; rua-koauau*, *kumara* store; *rua-tahuhu*, potato-store; *rua-tirawa*, a store with an excavated floor.

The Rev. T. G. Hammond says: *Rua-pare*, a storehouse built on the ground; *rua kopia*, an excavated store-pit (*cf.*, *rua kopiha*); *patakitaki*, divisions in a storehouse; *koropu*, a low house.

Tregear gives *koropu*, a hole for storing food in; and another authority gives *koropu*, an underground house; though Williams's Maori Dictionary gives it as "a house built of wrought timber."

Pakorokoro is given by one authority as a storehouse. Tregear gives *pakoro*, a potato-stack (? a heap); and *pakorokoro*, as a place in which to keep pigs.

These *rua kai* or pit storehouses were constructed for use only, and were not ornamented, as were raised stores in many cases. In these two forms of *rua* already described a little carving might be seen on the lintel of the doorway, but not often, and in the true pits to be described nothing was heeded but pure usefulness.

The following notes were obtained from Te Whatahoro, of the Wairarapa district:—

In the case of the more important store pits or huts, wherein were stored the bulk of the crop for preservation, a certain *karakia* (charm, invocation, &c.) was recited over each such store when completed, on account of the task having been brought to a satisfactory conclusion; being equivalent, or almost so, to the *kawa* recited over a new house. Another charm or invocation was recited over each such store when it was filled, and just prior to it being closed. These ceremonies were performed by a priestly

Fig. 43.—A Rua Kai or Food-store Pit, East Coast.

adept. This latter rite rendered the store and its contents *tapu*. No women were allowed to enter a store that had been made *tapu*. Men only stored away the crop in such places, and men only took the contents out when required. Having been taken out by men, women carried the baskets to the *rua kopiha*, the pit store in which products for present use were kept, placed them therein, and took them therefrom as wanted, inasmuch as this type of store is not *tapu*.

When a *tapu* store of *kumara* is opened for the first time since it was filled and closed, the man who opens it puts in his right hand and takes out

a single tuber, taking one from the pile on his right as he faces the interior of the store. He takes this tuber and roasts it at a fire kindled out in the open, not in a cooking-shed, and then gives it to his elder brother or his grandchild to eat, or possibly to his own wife, in which latter case it is said to be *tamawahinetia.* This ceremony is performed in order to take the *tapu* off the contents of the store, that they may be used. The small tubers known as *koai* and medium-sized ones termed *taranga*, were taken for the use of the people to whom the crop belonged, and these were consumed ere the large tubers were taken, though the fine large ones were always selected for the use of visitors.

When one of these stores was closed the door was slid to close the entrance aperture, and a cord, one end of which was secured to the door, was passed through the wall, drawn taut, and secured to a peg driven firmly into the ground, after which both peg and cord were covered with earth, so as not to be easily detected by any person seeking to rob the store. This cord is called the *taura miro* of the store, and sometimes the *taura whakarae*, the former being the truer or more genuine name. In many cases, however, where the type of hut permitted of such a usage, the cord was led along the side wall to the rear wall, passed through it, pulled taut, and secured outside in some secret place, underground or otherwise, so that it could not be seen.

These food-pits were often given special names, just as *pataka* and dwellinghouses were — such as Te Rua-titi, a pit store belonging to Te Whatahoro I, an ancestor of the Wai-rarapa peoples.

Te Whatahoro knows nothing of the doors of stores having been narrowed at the top, as described by Polack.

Mr. C. O. Davis, in a paper on "Ancient Stone Images of the Maoris," says, "Due attention also was paid to the building of storehouses year after year; and when the crop was gathered in the storehouses and their contents were declared to be *tapu* or sacred, after the performance of the necessary ministrations. All that remained of the crop outside the consecrated building became by right the property of the *tohunga.*"

The following is taken from a description of a Maori village by Sir George Grey: "Storehouses in which their vegetable products were stored were sunk in the ground, the pit thus made being neatly roofed over; they were entered by a carved door, and the roots were built up on each side of the storehouse in stacks, with a neat central passage running between their perpendicular sides; a ladder led down into the pit, the door being kept carefully closed. The neatness and convenience of such storehouses was complete."

3. Excavated Pits, entered through Hole on Top; Covering for Entrance, but no Roof.

This form is a true pit, and has been described as "a hole in the ground with a lid to it." In making such pits a hillside is not sought; a level site is better. The edge of a terrace and tops of ridges are good sites, but in loose soil, such as pumice country, they may be made almost anywhere. In making these pits a hole some 20 in. square is dug, and after being carried down a short distance the excavation is widened until a pit of the requisite size, say 4 ft. square or more, is formed. This is sunk to a depth of perhaps 5 ft. from the surface. The walls are vertical or curved and even, but are not lined, although fern-fronds of the harsher kind, as of *rarauhe*, &c., are used to cover the floor and to face the walls with when food is stored in the pit. In making the excavation the earth is put in baskets and passed up through the entrance-hole, whence it is carried away by an assistant.

To close the entrance of these pits a *kopani*, or lid, was used. A square frame of timber was constructed at the edges of the entrance-hole, and on this was placed a rude lid or cover. According to the depth of the pit, it might or might not be provided with a short ladder for descent, such ladder being a section of a small tree with notches cut in it for steps, the typical *arawhata* or ladder of Maoriland. The sides of this square entrance-hole were often lined with slabs of wood or tree-fern. We shall also see that in some districts these pits were made of a circular form.

Dr. Marshall, quoted above, remarks that some of these food-pits seen by him at Te Namu *pa*, Opunake, in 1834, were 7 ft. and 8 ft. deep, and from that down to 4 ft. in depth. He adds, "I have since learned that each family had its own potato-pit, and that the exclusive rights of the several proprietors to the pits and their contents were generally respected, and never with impunity invaded." In speaking of the Wai-mate *pa*, lower down the coast, he says, "As observed before at Te Namu, potato-pits were found in all directions, and so numerous as completely to honeycomb the whole of the ground occupied by these *pa*. Here, however, they were fitted in many instances with trap-doors, which, being shut down, excluded the wet from without and allowed even the most incautious to walk over them in perfect security. Most of these holes were well stocked, and several of them filled with potatoes for consumption; those for seed being put up in baskets carefully covered with fern, and stowed along the ridges of different houses or heaped upon *whata* in every corner of the *pa*."

Several names are applied to these pits among different tribes, but *rua* is the generic and most widely used one, albeit, as it may be applied to any pit or hole, *rua kai*, or food-pit, describes them better.

Williams's Maori Dictionary gives *hapoki*, a pit for storing potatoes; *hapoke*, a pit for storing potatoes; *hopekiwi*, a potato-pit; *kopiha*, a pit for storing potatoes; *korotangi*, a pit for storing potatoes. *Koropu*—a store, a hole for storing food in—is given in Tregear's Dictionary.

Among the Tuhoe folk a pit excavated in the same form as a *rua kai*, or food-pit, and used for the purpose of catching rats, is termed a *kopiha kiore*. It is also known as a *torea*. It should here be remarked that these pits made for the purpose of catching the native *kiore*, or rat, were formerly used in considerable numbers, and, as our forests are felled and burned, are thus often seen. As they much resemble in form the smaller food-pits used for storage purposes, the one may well be mistaken for the other. Rat-pits were so excavated as to be much larger at the bottom than at the top, so as to prevent the rats escaping.

The form of pit store described above is sometimes made on sloping ground, but not, as a rule, ground with a steep slope. The framework surrounding the entrance thus has a slope to it, hence the lid or door has the same pitch, which causes it to shed storm-water the better. Even when made on quite level ground one side of the entrance is often raised so as to impart a slant to the lid. A small ditch led off any storm-waters on a hillside. Many of these old hillside pits may be seen at the Bridge *pa*, an old native settlement long since deserted, just south of Te Korohiwa (south of Titahi, Pori-rua). They may also be seen in great numbers in many other districts.

In his paper "The Ancient Fortified Pa," published in Volume xx of the "Journal of the Polynesian Society," Mr. W. H. Skinner has some interesting notes on food-stores. Of the pit stores he says, "Near each family's quarters (in a fortified village) were the underground *rua*, or pits, in which the *kumara* and other stores were preserved. These *rua* are a prominent feature in all Taranaki *pa* (fortified villages). They were usually 6 ft. to 8 ft. deep, and 8 ft. to 10 ft. wide at the bottom, but narrowing upwards to the entrance, which was about 2 ft. square, lined with slabs of the fibrous matter cut from the *whekii* tree-fern, which would last certainly over one hundred years. It was only the square upper part of the *rua* that was so lined to a depth of 18 in. or 2 ft. The *rua* mouth was covered over with slabs of the same tree-fern."

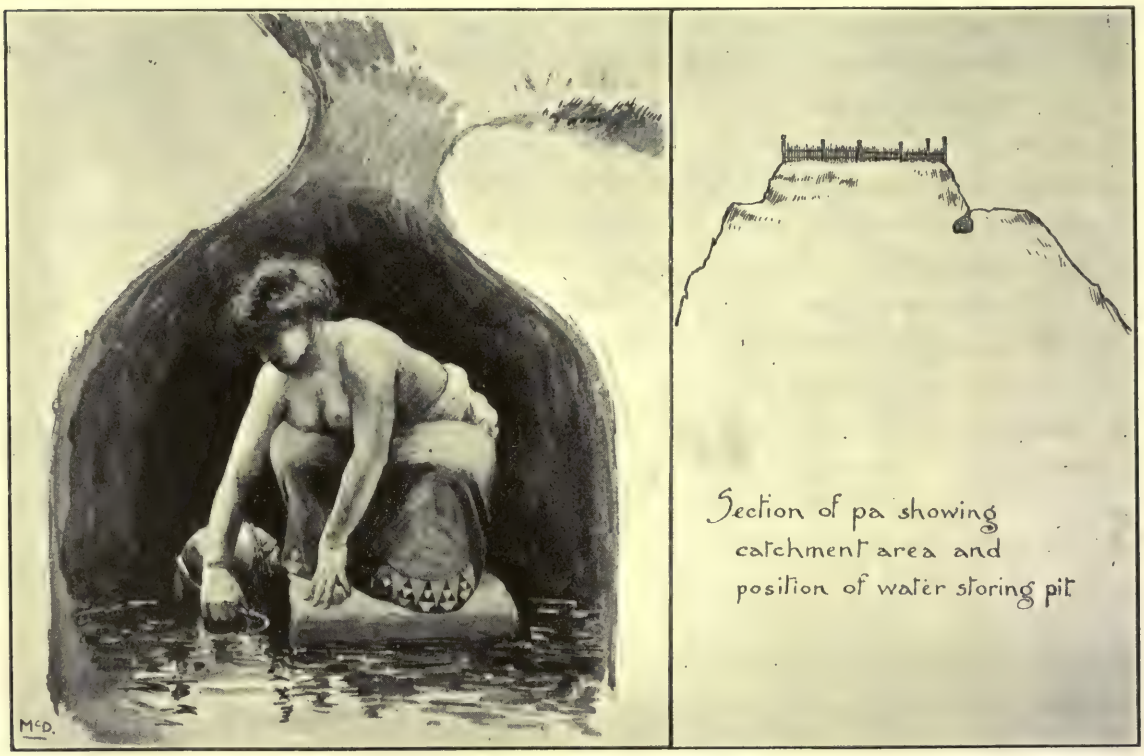
We have lately had an opportunity of examining some very well-preserved *rua kai*, or food-pits, at the Tunu-haere *pa*, which is situated on a spur on the right bank of the Whanga-nui River, and opposite the native village of Kaiwhaiki. This *pa* was abandoned in the latter "forties" of the nineteenth century. An illustration of it in Power's "Sketches in New Zealand" utterly fails to show the true form of the hill. At this place, within the old lines of defences, are many old store-pits, some on sloping ground, some situated at the bases of certain small scarped summits of the spur. A person would descend

into them by means of a log of wood cut into a series of steps, and in some cases steps were cut out of the earth within the pit when it was being formed. The well-like entrances to these pits are of rounded form and about 2 ft. wide. The depth of soil, from the surface down to where the chamber widens out, is in some cases as much as 3 ft., in others much less; but doubtless changes have been effected in such matters since the desertion of the place—as by erosion, trampling of stock, rooting of pigs, &c. The pit-chambers are dome-shaped as regards the upper parts, most being circular at the base, a few square, and one is semicircular in form. In no case is the original floor visible, all being covered to a lesser or greater extent with earth and other débris that has fallen in through the well-like entrance-holes during the past sixty years. These entrance-holes are at one side of the pit as a rule, not in the middle, as is often the case elsewhere. The walls seem to have been formed in a perpendicular manner for 2 ft. or 3 ft. upward from the floor, and then gradually and symmetrically converge in order to form the dome-shaped roof. Great pains have been taken in order to fashion these domed chambers true to form and perfectly even and symmetrical in finish. In some cases the walls have become overgrown with moss, but in others they are free from any such growth, and are as even and sightly as though finished but a few months ago. The packed sandy soil looks as though it had been shaved with a thin knife, so smooth is the surface. And they have been abandoned for over sixty years! One of these pits was 8 ft. wide at the bottom, and about 6 ft. deep, not including the entrance-shaft. It had steps cut out of the solid earth by which to descend from the entrance. In another was an earthen partition across the middle of the pit, about 1 ft. wide or upwards, left when forming the chamber. This probably served to divide two different lots of *kumara*, of different sizes. It would also serve as a step. Its height was not ascertained, owing to the mass of debris on the floor, but it is probably 2 ft. or 3 ft. A semicircular pit examined had its entrance on the flattened side. These entrances would be protected from the weather by wooden slabs. A square-shaped pit measured was 9 ft. by 7 ft. Others, again, were somewhat smaller. In one case a pit has apparently been sunk on the narrow summit of the ridge, then the surrounding earth cut away so as to leave a square block 5 ft. or 6 ft. high standing isolated, and which represented the walls of the pit. In this case one would have to clamber up to the top of the earth-mound by some form of steps, and then descend into the pit.

Since writing the above notes we have received a communication from Mr. T. W. Downes, of Whanga-nui, informing us that he has made inquiries of older natives of Kaiwhaiki as to the purport of the earthen partition in the above-described pit. He was informed that this and other such pits were not used for the purpose of storing food-supplies in, but were excavated

and used for the purpose of storing water in—to conserve water for the use of the inmates of these hill forts. In this particular instance the nearest water-supply is a creek at the base of the spur on which stands the Tunu-haere *pa*—a heavy climb for a laden person.

These water-storage pits are semicircular in form, with an opening on the top whereby persons descended, as shown in the illustration. In some cases the raised central piece, or low partition, was composed of earth, as in the one examined by us, the surface thereof being covered with wooden slabs in order to preserve its form: in other cases it was constructed of timber.



WATER-STORAGE PIT.

A person descended through the mouth of the pit, and stood on the raised central part in order to fill vessels when procuring water, dipping it from one of the two compartments into which the lower part of the pit was divided.

These water-storage pits at Tunu-haere are situated at the base of a mound formed, when the *pa* was scarped and terraced, by leaving intact a portion of the original summit of the ridge. The pits are excavated at the base of this mound, and rain-water falling on the mound was conducted into them, and so preserved for future use, the pit-mouth being covered with slabs of wood in order to prevent waste and contamination. In some cases the water-cisterns were filled by hand.

The above was not by any means a common usage, and seems to have been quite unknown in many districts. Te Whatahoro, of Wai-rarapa, informs us that he has heard of them as having formerly been used. We are indebted to Mr. Downes for sketches, as well as the above information.

Mr. Skinner informs us that this partition-like step is also seen in store-pits in the Taranaki district, but we do not know that water was ever stored in such pits in that district.

Mr. Field speaks of the *kumara* storage-pits of the Whanga-nui district as being beehive-shaped excavations in dry ground, usually on the tops of ridges, with a square opening just large enough to enable a person to descend into them. This well describes pits seen by us at Tunu-haere.

Mr. Skinner informs us that the store-pits (*rua*) of the Taranaki district are almost invariably circular in form, dome-shaped, and having square entrance-holes. At Otumatua *pa*, five miles south of Opunake, many *rua* were excavated in rock; while on the Mikotahi Islet were many such dome-shaped pits, all connected with a central one by means of passages, and it is believed that some of these were occupied as dwelling-places in former times, the hut space on the islet being extremely limited. At one old *pa* visited by Mr. Skinner many pits were situated within the outer defence of the *pa;* short tunnels had been driven in to the base of a central mound, and a circular pit-chamber excavated on each side of the end of each tunnel, thus economizing space, so that all available building-sites could be utilized for huts.

In connection with the various circular store-pits used by some Maori tribes, the following extract from A. H. Allcroft's "Earthwork of England" is of some interest: "At Fisherton, near Salisbury, was found a group of curious underground pits of conical section, the entrance being by narrow sloping shafts which expanded below into circular chambers, from 7 ft. to 10 ft. in diameter. These seem to have been constructed in the Stone Age." Pits of various forms, says this writer, were made for use as storehouses, and to contain water.

Great care was always taken in the selection of the situation for pit stores, the driest soils and driest situations being sought, hence the edge of a terrace, the high bank of a river, and the tops of ridges were common situations for such stores. Some of these would be situated within the lines of defence of a village, but many of them were outside, and even at some distance from the hamlet. In the event of invasion by a numerous enemy such outside stores would be emptied if time permitted of it, and their contents placed in the *pa*.

All these pits and semi-subterraneous stores come under the name of *rua*, and the walls and floors were always lined with rushes or bracken, or some such items, ere the crops were stored therein; otherwise the tubers would be apt to decay, as much more care is necessary to preserve *kumara* than is the case

with the potato. A lining of rushes round the slab or earthen walls of a pit is termed *patutu*. The rushes were laid in an even manner on a level piece of ground, and formed into a long mat by means of weaving two ties along the entire length of the row. This mat would then be rolled up, taken into the pit, and there unwound and placed round the walls, with the butt end of the rushes downwards. Such a lining was of the best; grass not being used for the purpose, as it contains too much moisture, save in cases where the tubers are for immediate use. These mats of rush are rolled up and put away when the pit is empty, and thus serve for another season. When the mat is first arranged round the walls, pegs (*pouturu*) are stuck in each corner to keep it in position; and when a certain quantity of tubers are stacked up they hold the *patutu* or mat in place, whereupon the pegs are removed. In some cases slabs of wood are placed on the floor, upon which a layer of bracken-fern is laid, and on this again a layer of rushes, upon which the tubers are carefully stacked, each one being laid with care on the heap so as to avoid any abrasion or bruising. In some cases the layer of slabs seems to be dispensed with, and this would depend upon the nature of the soil, some soils being much drier than others. *Lycopodium* and fronds of *Dicksonia squarrosa* are often used as dunnage.

Taro (*Colocasia antiquorum*) and *kumara* were never stored in the same pit by the Maori, for he believed that the latter would be harmfully affected in some manner by such a usage. Nor were *kumara* and potatoes stored together. *Taro* and potatoes may be placed in the same pit, but not mixed together, being placed in separate bins. Te Whatahoro remarks that many years ago he heard Te Hapuku remark, when partaking of some sweet-potatoes, "*Ha! He kumara whakaranu ranei ki te taewa, inahoki te ahua nei he maaro*" (Have these *kumara* been mixed with potatoes, for they are hard?).

In an account of the Wai-mate *pa* (of "Alligator" fame), published by Mr. Seffern, occurs the following: "There were about thirty provision-rooms, in which were excavated cells which would each hold about 50 tons of potatoes. These provision-houses were entered through a waterproof trap from their cook-houses." This was in 1834.

Mr. T. H. Potts, in his "Out in the Open," speaks of food-pits he saw at Hikurangi: "The potato-pits are excavated in dry places, with a framed entrance of strong squared wood, over which are laid sheets of bark or broad flattened slabs of tree-fern. These well-stocked stores of food appear to be in charge of women; a long string of girls daily start from the pits, each damsel carrying a flax kit heavily laden with this favourite esculent." This was during a large native meeting held at that place.

In writing of storage-pits some word of explanation should assuredly be given as to the curious subterranean dwelling-places occasionally made and used

by the Maori in former times. These were termed *whare manuku* in the Wai-rarapa district. They were made by excavating a rectangular pit about 4 ft. deep, over which was erected a Λ-shaped roof of timber, which was then covered with a thick layer of earth. Such places were sometimes occupied by very old folk who were past work. The floor of such places was often covered with a deep layer of dry sand, in which the old people would lie in order to keep warm, and which is said to have been a good substitute for bed-clothing. These dwelling-pits are said to have been warm places to sleep in. In the year 1849 two very old women were observed living in one at Wai-rarapa.

4. Cave Stores.

These have been noticed in some parts, but were not commonly used, as were the forms of store-pits already described. In a few cases natural caves were used for storing-places, and even for living in; but this would be merely as a temporary abode—such as in the case of persons travelling, either for a single night or longer, when weatherbound. Natural caves were also used as dwelling-places by parties frequenting the coast for the purpose of fishing, &c., or by those engaged in collecting forest-products. Some caves used for such purposes received special names—such as Te Waha-o-te-ana, on the old track from the Whirinaki River to Otukopeka; and Te Ana-o-Tikitiki, at Wai-kare Moana. Many of these shelters, termed *ana* by the Maori, are better described as rock shelters than as caves. Stages or platforms were often erected in such places by fishers and woodsmen, to be used for storing food products and other items on.

Caves used as stores were, however, more frequently artificial, it would appear. These were sometimes excavated in cliffs, where the formation admitted of such work by a people not possessed of metal tools. Such artificial caves are usually rectangular in form as to the lower part, and somewhat rounded off above. At Mingi-nui, on the Whirinaki River, Te Whaiti district, is a small cliff or bluff of indurated pumice, in which some caves have been excavated. These were used as places wherein to store potatoes, the entrance being closed with wooden doors. When last seen by us one of these caves was occupied by old Hamiora Po-takurua, of Ngati-Whare, as a sleeping-chamber; that old nonagenarian asserting that it was more desirable as such than his hut, then largely occupied by *Pulex canis*.

In describing various kinds of food-stores used by the Maori, Mr. Wade, who visited the Roto-rua district in 1838, says, "There are two forms of *rua*. One form is a quadrangular hole, about 3 ft. deep, dug in the ground, with the framework of a sloping roof erected over it, and covered in with a strong thatch, the entrance being by a small door in the front (this seems to apply to the pit excavated in sloping ground). The other form is a cave dug

in the earth, and entered by a hole from the top, or sometimes, as at Pa-teko, from the side." In describing Pa-teko Islet, in Roto-iti, this author describes the artificial-cave food-stores in the cliffs of that picturesque isle: "We put across to view a singular island called Pa-teko, lying off Motu-oha Point. The island is high and rocky, but a good part of it, on the side facing Motu-oha, covered with verdure. Its steep sides had been perforated by the people to form *rua* or caves, for the storing of *kumara* or potatoes. The mouths of some of the *rua* were open, others closed by square wooden doors. A few natives were living on the rock as guardians of the stores. On one side, just above a native hovel, there was a cavity larger than the rest, having a semicircular range of smaller *rua* just above it, and appearing at a distance like the ruined entrance of an old monastery."

At a place named Te Pehu, near Roto-rua, are some of these cave stores or cave dwellings, and which are described by Mr. Cowan in the "Journal of the Polynesian Society," Volume xvii, page 222. Mr. Cowan says, "A series of singular little doorway-openings cut in the mossy cliff was seen on the right, and investigating these we found that they gave access to the ancient cave dwellings. We counted nine of these artificial caves, all on an alignment; a number of them, close together, were connected by openings cut through the soft rock. The little doorways, from 3 ft. to 4 ft. high, exactly resembled the openings to the *rua* or *kumara* pits which are often seen on the sites of old *pa* cut out of the hillsides. No doubt these caves, or some of them, were originally made for food-stores. . . . Entering one *rua* near the lower end of the terrace we found it to measure 5 ft. in height, with a length of 13 ft., and a width of 8 ft. 6 in. The roof was of a dome-shape, very carefully rounded; the marks of the stone axes . . . with which the Maoris chipped out the soft rock were still as plain and well preserved as if they had only been made yesterday, instead of centuries ago. The sides of the little underground dwellings were very smoothly cut; the floors were cut out to a foot or so below the level of the terrace outside. . . . The next caves are so close that they are connected by the wall-openings already spoken of, so that the people in one could converse with their neighbours." These caves are said to have been made about two hundred and fifty years ago, though possibly enlarged since that time.

Mr. Cowan also mentions certain artificial caves at the Okoihu *pa* which were used as storehouses: "On the uppermost terrace, in the sandy walls are a series of old *kumara* store-pits, their arched roof as perfect as when they were first hollowed out many generations ago."

In the Whanga-nui district a storage-pit in the form of an artificial cave made in the face of a bluff or hillside is known as a *rua pongere*. The mouth of such a cave was closed by means of slabs of *whekii*. The semi-subterranean

roofed *rua* is often referred to in the same district as a *rua tuanui*—literally, a "roofed *rua*." See also Tuta Nihoniho's description of the *rua-roa* at page 99.

One or two similar caves, probably used as *kumara* stores in former times, may be seen near an old *pa* on the left bank of the Whakatane River, opposite Tane-atua. Here also the walls retain the marks of the tools used in excavation. The cluster of *pa*, or forts, in this vicinity were formerly occupied by the Kareke and Ngai-Tamango clans.

In his journey from Taupo to Roto-rua in May, 1841, Dieffenbach came across some of these cave stores: "The sides of this small ravine consisted of cliffs of pumice or tufa; and here the proprietors of the potato-ground had hollowed out deep caves, which were secured from without, and were full of potatoes. Snares made of flax were laid all around the entrance, for the purpose of destroying the rats. . . . One of the holes filled with potatoes had been left open for the use of travellers, as is customary in New Zealand."

Cave Stores at Wai-totara.

At the old Ihupuku *pa*, situated about a mile from the Wai-totara Railway-station, may be seen a remarkable series of old storage-pits and caves exemplifying three distinct types. They are situated on the summit and in the steep sides of the picturesque isolated hill that formed a fortified village of the Nga-Rauru Tribe in neolithic and also post-European times.

The storage-pits referred to are extremely numerous; there must be several score of them in all on the summit and sides of the hill. These pits are of three distinct types,—

1. *Rua tahuhu:* Deeply excavated rectangular pits, formerly roofed with timber, or timber and thatch, and earth-covered. Entered from the end.
2. *Rua kopiha*, or *rua poka:* Well-like pits, rectangular or circular, dome-shaped roof, and small hole therein through which persons descended into the pit.
3. Artificial caves in soft sandstone bluffs, of various forms.

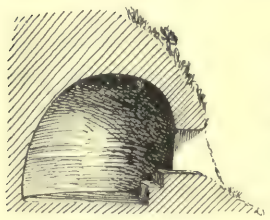
Those of the first type were provided with a door in the front wall; those of the second with a lid-like trap; while the third type had a similar trap, but it was fixed in a slanting position of perhaps 80°, those of the second type being almost horizontal.

At the northern end of the *pa* is an interesting store-pit 9ft. by 5ft., with a dome-shaped roof, and divided into two parts by a partition 5in. thick. This pit was excavated out of soft sandstone, as easy to cut as cheese, and the neatly formed partition is simply a part of the sandstone left standing. Of this partition, 2ft. at the back of the pit extends up to the roof; the balance is about 18in. or 2ft. high. The pit walls are perpendicular, and the whole finished in a very neat

manner. Another pit hard by is circular in form, and about 8 ft. or 9 ft. in diameter, and this also is divided by a similar partition. Some of the pits, of type 1, are 6 ft. deep and 18 ft. by 12 ft. in size; others, of type 2, have perpendicular walls and dome-shaped roof. All are very neatly formed, while in some both walls and roof are curved.

But the most interesting series is seen near the base of the eastern slope of the hill—the sunny slope; none are noted on the western slope, for the Maori ever liked to face his storage-places to the sun. In these soft sandstone bluffs and slopes are many cave stores of interesting form, numbers of which are in an excellent state of preservation; others are choked with debris and vegetation. Quite possibly some of these have been excavated in late times, since the introduction of the potato; but, inasmuch as all have been fashioned on the old patterns, these are as good as pre-European ones for purposes of description.

To describe some of these forms: One has a rectangular entrance-hole some 36 in. wide and 30 in. high, opening into a cave about 11 ft. long by 6 ft. wide at the bottom. The roof is about 5½ ft. high at its highest part, and is dome-shaped; and none of the walls are vertical, save the front one, the back and end walls curving gradually to merge into the dome-shaped roof. This latter expression, however, is not quite correct, as the front wall is not curved or arch-like, as are the other three, hence a cross-section of this storage-cave is that given in diagram.



It will be observed that the entrance is not at the floor-level, but high up, at about the middle of the front wall. In no case was the entrance noted at the floor-level; in some cases the upper part of the entrance is flush with the roof of the cave. This possibly was designed for the conservation of warmth, an important item in the storage of the sweet-potato, the principal cultivated product of the Maori in former times. Against the front wall, immediately below the entrance-hole, a block of the sandstone formation has been left intact, and jutting into the cave about 2 ft. at its base. In this buttress-like block steps have been cut, so that a permanent means of access to the floor of the cave was thus obtained. At the south end of this cave, at the floor-level, is a hole about 3 ft. by 2 ft., by means of which access is gained to a smaller storage-cave. This is one of the most interesting cave stores noted in the district.

A few yards northward along the slope is another such artificial cave that is oval in form, and measures some 11 ft. by 7 ft. or 8 ft. All the walls are curved inwards from the floor-line, and merge perceptibly into the arched roof, which is about 6 ft. high at its loftiest part. It must, however, be borne in mind that a certain amount of debris has collected on the floors of these caves, hence all figures concerning height may be queried. Not one of these stores is now in use, and they seem to have been in a state of "innocuous desuetude" for many years. In one

case only is noted a piece of timber pertaining to the apparatus for blocking the entrance-hole, or door, that has survived.

The entrance to the above cave is situated high up, the top of it flush with of the roof of the cave. Across the middle of the cave, under the entrance, a block the sandstone formation has been left so as to form a partition, dividing the cave into two parts that might be termed "bins." This partition is about 16 in. wide, with vertical sides, and about 3 ft. high above the original floor. We are informed by local natives that the sweet-potatoes were sorted, and the large tubers stored apart from the small ones in such places. This cave, like most others, has been very neatly formed, and is most symmetrical in its proportions.

Just north of the above is one of the smaller well-like pits, with the entrance-hole at the top. It is rectangular in form, with a dome-shaped roof. Then comes another small one about 5 ft. by 5 ft.; then an oval one about 5 ft. by 4 ft.; these last two being cave stores.

An oval-shaped cave near by is about 10 ft. by 8 ft., and has a partition across the middle some 30 in. or 36 in. high, like those described above. The entrance of this cave is in a good state of preservation, and illustrates clearly how the entrance-holes to these store-caves were closed by means of little doors, or traps. Across the bottom of the hole a wooden beam still remains in position, and the sandstone formation on the sides and above the hole has been cut away so as to form a slanting ledge about 6 in. wide. The trap-door or separate planks, used to block the aperture, has been laid on the beam and ledge, and, being at a high angle, the storm-water would run off it, while it would also be sheltered and protected to some extent by the projecting mass of sandstone out of which the ledge was cut. Local natives remark that slabs hewn off the trunks of tree-ferns, or flatted pieces of the trunks of *Dicksonia squarrosa*, were used for such traps.

Some of the entrance-holes to these caves were as small as 20 in. by 24 in., and all were probably rectangular originally, though some are now much abraded.

One rectangular cave, about 12 ft. by 8 ft., has half its floor sunk about 30 in. below the level of the other half. Another, about the same size, with a dome-shaped roof, has a partition-wall about 6 in. thick across the middle. A smaller cave has a low partition for three-quarters of its width, then the partition extends right up to the roof. Another is oval in form, about 11 ft. by 7 ft., and has half its floor some 2 ft. or $2\frac{1}{2}$ ft. lower than the other half, while on the edge of the higher part a partition-wall of sandstone 4 in. or 5 in. thick rises to the roof for half the width of the cave, the rear half.

It is evident that the excavators of these caves formed the roofs thereof in dome-like form, because they had learned from experience that this indurated sand, or soft sandstone, stood better in that shape.

Thirty-seven of these caves and pits formerly used for storage of crops were seen on the eastern face of the hill, and there are probably more.

In the sandstone bluffs on the left bank of the Wai-totara River, a mile down the valley, there appear to be some more of these cave stores, but these were not examined.

This river is said to have been so named on account of its bed containing a large number of stumps of *totara* trees (*Podocarpus totara*). About one mile from its mouth some hundreds of stumps are seen standing up in the channel of the river, at low water. These stumps are apparently *in situ*, and, presumably, when these trees were growing the land was at a higher level above the sea; also the course of the river must have been changed here, as it now flows through what must have been a dense forest. Wakefield noted this phenomena in 1840, and remarks: "About a mile from the beach . . . was a deserted fishing-village, as the racks and fish-bones sufficiently described. In the river at this place about a hundred stumps of large *totara* trees rose vertically above the level of the water, almost impeding the whole navigation . . . I concluded that the river had at some distant period changed its course, and flowed through a *totara* grove."

Mr. Cowan, in his "Maoris of New Zealand," describes a small artificial cave at Te Whetengu, near Roto-rua, that was used as a repository for sacred objects: "Just opposite the carved figure and close to the foot of the stone stairway is a singular and cave-like opening, a recess cut in the face of the cliff. It is about 4 ft. deep and about the same width, but the mouth is much smaller, about 12 in. by 15 in.; the sides are squared and shaped as if a wooden door once closed it. This cave, Rangiriri said, was the sacred storehouse of the gods, and in it was kept the image of the great war-god of the Arawa Tribe, Maru-te-whare-aitu."

East-coast Types of Food-stores.

The following account of the different kinds of storage-pits and semi-subterranean stores, as constructed by the natives of the east-coast district, has been contributed by Tuta Nihoniho, of the Ngati-Porou Tribe. He first remarks that all storage-places for the *kumara* were subterranean (as the *rua tahuhu*); in no case were ordinary huts or store-huts built on the surface of the earth so used. Both kinds are included in the generic term of *rua kai*. Including a small and crude makeshift type, there were four different forms of *rua kai* employed in the above district:—

1. The *rua tahuhu* type; an excavated rectangular pit with a roof built over it.
2. The *rua kopiha;* a well-like pit, wholly subterranean, entered from the top.
3. The *rua whakatoke*, or *rua tawaero;* semi-subterranean; a shallow pit in which tubers were placed, then covered with bark, thatch, and earth.
4. The *rua-roa;* an artificial cave or tunnel in a hillside or bluff.

Rua tahuhu: These were the best-constructed store-pits of the roofed kind, and were sometimes large enough to contain an immense quantity of tubers. Special names were assigned to them, usually the names of ancestors. Kapokapo-a-wai and Tauranga-wai-kahia were the names of two large stores of this type at the Ngati-Ira *pa* of Whakaihu-puku, at Waiapu. Large *rua tahuhu* had three *tahu*—the true ridge-pole and the longitudinal pole parallel with it on either side of the roof. These side poles helped to support the roof, or, if a hewed beam, to break joints of roofing-slabs on—*i.e.*, to support the ends of such slabs on if they were not long enough to reach from the ridge to the top of the earthen wall. There were posts to support each of these longitudinal beams, the number of such posts depending on the length of the store. If a long one, there might be several *hononga* or joinings of these beams. Although there might be two series of slabs to form the roof of a large store-pit, there was no break in the slope of the roof, be that roof a *hoka* (sharp-pitched) or a *kaupaparu* (low-pitched) one. *Rua tahuhu*, then, was a name applied only to the *rua* that had three *tahu*, as described. It was never applied to such as had but one *tahu*—that is, the ridge-pole only, and not the side beams parallel to it. The plate at the ground-line for the lower ends of the roofing-slabs to rest on was termed the *paetara*.

The body of the store being an excavated rectangular pit, it follows that the walls are represented by earth alone—vertical walls of earth. Along the tops of the side walls—*i.e.*, on the surface of the ground near the edge of the pit—a beam might be placed to act as a wall-plate to support the lower ends of the up-and-down slabs that formed the roof, but in many cases this plate was dispensed with, and the lower ends of the roofing-slabs rested on the earth. The plate was desirable in cases where the soil was of a friable nature, whereas in a stiff soil, such as clay, no such plate was needed. In covering the roof, one end of the flat-hewn slabs of wood used for a first covering rested on the ridge-pole, the lower end on the ground or wooden plate; thus the roof resembled an inverted V. The lower ends of such slabs were placed a little distance outwards from the edges of the pit, so that the storm-water running off the roof might not percolate through the soil into the pit. From the eaves the earth was cut away, so as to form a downward slope from the eaves to a small runnel or ditch formed parallel with the eaves. This ditch was so made as to have a fall outwards toward the front of the *rua*, so that storm-waters might be let down the sloping ground in front of the pit. In order to secure such easy drainage, these pit stores were usually formed along the edge of a terrace, or, if such a site was not obtainable, then on sloping ground. In cases where the storm-water from the roof and ditch (*manga* or *tamanga*) ran down a steepish slope near the mouth of the

pit, and would be liable to scour out the earth of such slope, slabs of timber were sunk in the surface of the sloping earth, as a channel or runway for the waters to flow down. Such a runway was also termed a *tamanga*.

The very large store-pits were made in terrace formations, for obvious reasons; a small pit store might be made in sloping ground, but it could not be carried back far, or the depth of the excavation at the back would be too great, thus the pit would not be dry enough to store *kumara* in. Storm-water or seepage-water would cause at least the rear end to be damp, not to speak of the difficulty of roofing the pit. Very great care was necessary in storing the *kumara*, so susceptible was it to damp. A slight dampness, or bruise, or abrasion would cause these tubers to decay, and such decay was quickly communicated to surrounding tubers. Hence the crop was handled most carefully, each tuber being handled, manipulated, and stacked separately, nor was any earth allowed to adhere to them. A crop of *kumara* stacked in a pit store is the very height of elaborate neatness.

When, however, the Maori obtained the common potato he soon found it needed much less care in handling and storing, that it could be thrown carelessly into a basket, and poured out in a heap in the store; also that it might be kept for a considerable period in ordinary huts or elevated stores. The cultivation of the potato also demands much less labour and care, hence the decay of *kumara* cultivation.

It will be seen that the roof of a *rua*, or pit store, was not constructed as that of a house—it had neither rafters nor battens, save that in large ones the extra *tahu* on either side helped to support the roof, the covering resting on it as it does on the roof-battens of a house. The slabs or planks used to cover a pit store were of *totara* timber, if available, on account of its durability; they were known as *oka* when used for this purpose. They were placed close together, side by side, up and down the roof, simply laid on, and not secured in any way. Over this layer of slabs was laid in a similar manner a layer of *turihunga*, or flat-hewn slabs of various species of tree-ferns. The actual trunk of the tree-fern was not so utilized, but the slabs were hewn from the thick masses of aerial roots developed by certain species, more particularly by *Dicksonia fibrosa*. These are laid on the top of the wooden slabs, side by side, so as to break joints, but are not secured. Over these *turihunga* was laid a thick layer of thatch, of leaves of the *toetoe kakaho* (*Arundo conspicua*), laid on in overlapping layers, the *whakapipi* process—as in thatching a house-roof, save that in the case of the *rua* the thatch is not tied on. Strips of the bark of *manuka* (*Leptospermum scoparium*) or of *totara* (*Podocarpus totara*) were often used in place of the *toetoe* thatch. The bark so used in roofing pits and houses was the outer bark only of those trees; the inner bark was never so used by the Maori. The loose semi-

detached outer bark was obtained by freeing a strip at the base of the tree, and then pulling the lower end outwards from the tree until it became detached far up the trunk, and so fell to the ground. It was then folded up as one folds a piece of ribbon, and so formed into short compact bundles, which were confined by lashings of *aka* (pliant stems of climbing-plants). These bundles were then ready for transportation to the settlement, being carried on men's backs by means of shoulder-straps (*kawe*). This outer bark of these two trees is known as *kiri amoko.* Peeling this outer bark off does not kill or injure the tree as would the detaching of the inner bark, and in course of time another such layer of loose outer bark would be formed. To destroy the trees would be a pernicious process. The inner bark of the *totara* was used for some purposes, as in the construction of the curious vessels termed *patua*, but such material was obtained when a tree was felled for house-building or canoe-making purposes.

The next and final process in roofing the *rua*, or pit, was to cover the whole roof thickly with earth, including the ridge or summit; this earth being trampled down in order to solidify it, in time it came to grow herbage of divers species, which tended to retain the earth covering in position.

The *tuarongo*, or back of the *rua*, was also made of wooden slabs and *turihunga*, set up perpendicularly. As the store was essentially a pit store, it follows that the only part of the back end to enclose in this manner was the upper part—that triangular space above the level of the walls. Earth was then banked up against the rear end so as to quite conceal it. The front end of the *rua* was, however, a different proposition. Here the whole end was often to be closed in the same manner, save that a space had to be left for the door. The same material was used in constructing the front walls; and earth was piled up against the wall, and padded or compressed so as to form a broad-based wall outside the wooden wall.

The ridge-pole of these roofs was not quite horizontal, but raised a little higher at the back end of the house than at the front end. The object of this was to prevent any moisture collecting on the under-side of the ridge-pole dripping on to the stored tubers. Such moisture was sometimes produced by the warmth of these earth-covered pits; and when it so condensed and formed on the ridge-pole it ran down the slightly slanting timber to the front wall, and there descended. Such moisture was, however, but small in quantity, if any; but damp air could so escape. No aperture was left in the front wall, and when the door was closed the interior of the *rua* was in darkness. The two slabs set up as door posts or jambs were called *whakawai*, and a horizontal cross-piece was placed on the top of them. Across the upper part of the inner side of these jambs was secured the *perepere*—a piece of board or plank with a notched edge—and against this the top of the door rested when closed.

The notches in the edge of the board formed small apertures through which the damp air, or *pumahu*, is said to have escaped. These *perepere* were sometimes carved with such a pattern as *kowhaiwhai*, and sometimes adorned with pieces of bright-coloured *paua*, or *Haliotis* shell (*ka tiwhaia ki te paua*).

The door was composed of one or two planks. If two, they were placed edge to edge, and sewn together by means of passing a strong cord through holes bored through the planks near their edges. The door was about 4 ft. high, and wide enough to admit a large basket filled with tubers. This door was not swung or hung in any way, but was quite detached, and was lifted in and out of a groove at the bottom of the doorway, such groove being formed by securing two pieces of wood parallel to each other. When the pit was to be closed the bottom of the door was inserted in the groove, and the door pushed in between the door-jambs until its top came against the *perepere*. It was held in position by means of a peg jammed in between the edge of the door and one of the jambs, in many cases a small slot being cut out of the edge of the door-plank to receive the peg. Thus the door is jammed tightly in its upright position. (In some cases, says Tuta Nihoniho, the door of a *rua* was hung to one of the jambs by means of cords passed through holes bored in at the edge of the slab forming the door and others bored through the jamb. It swung on these cords somewhat awkwardly, and had often to be dragged or lifted in order to open it. It is by no means assured that this was a pre-European usage.)

A small *roro*, or porch-like extension of the roof, was often a feature of these *rua*; it would be about 3 ft. deep, and served to protect the face of the store and doorway from the weather. Posts (*pou taumaihi*) supported the *taumaihi*, or facing-boards of the gable. These boards were often carved (as in some cases were the outer sides of the planks composing the door) with such patterns as *taowaru*, *manaia*, or *kowhaiwhai*—that is, in the case of the more important *rua*, to which a special name was assigned. The roof of the porch was covered like the roof of the pit; in fact, it formed a part of the same roof, but it was not covered with heavy slabs, merely with bark and earth, the bark being supported by short battens, termed *tatara*.

In response to a request for further information on the above subject, our friend Nihoniho supplied the following :—

The door of a *rua* is in the middle of the front wall. The two *whakawai*, or door-jambs, are wide slabs, on top of which is placed another wide hewn slab termed the *epa*. On the inner edge of this *epa* the *perepere* is attached, and extends right up to the *tahu*, or ridge-pole, which it touches. Thus, the door being in the middle, there is no *pou tahu* or post sunk in the ground to support the front end of the *tahu* (ridge-pole), its place being supplied (as in many of our structures) by a short upright extending from the *epa* to the under-side of the ridge-pole, the latter resting on it.

The *epa* and the two *whakawai*, or door-jambs, being wide hewn slabs, extend outwards for some distance, the whole looking like a wide shelf supported by two wide uprights, until the wall is finished. The whole of the front wall, on both sides of the door and over it, are now reinforced (outside the slabbing) with puddled earth—earth mixed with water and formed into a wall by a punching and patting process, as we ourselves construct a clay chimney in a bush hut. Above the door this clay is supported by the wide *epa*, or lintel.

To form the *roro* or veranda, which is practically a continuation of the roof of the *rua*, though constructed separately, posts are set up about 3 ft. in front of the front wall of the *rua*, and to these posts are secured two pairs of *maihi*, one pair about a foot above the other, with an open space between, the lower pair acting as rafters for the two sides. Short battens are laid horizontally, with one end on the lower *maihi*, the other on the roof of the main building, and on these battens the covering of the roof, consisting of bark, is laid. The space between the two sets of rafter-like *maihi* in front is then blocked by means of placing short rods of *manuka* in an upright position on the inside of the upper *maihi* (*kaha runga*) and the lower *maihi* (*kaha raro*), where they are secured. At the back of these are placed strips of bark to prevent the earth of the roof from falling through. The roof is then covered with earth, like that of the *rua* itself, and the porch protects the door and mud wall from the weather. In some cases a *koruru*, or carved wooden head, is placed at the junction of the two upper *maihi*. A little space, perhaps an inch, is left between the top of the door and the *epa* or lintel, and the *perepere* is fixed with its notched edge downwards so that the notches or open spaces are level with the open space above the door: thus a little ventilation is provided. It is from the points of this notched board that the *tota* or moisture drips, whenever it runs along the *tahu* and down the *perepere*.

The name of *rua tahuhu* was applied to the large pit stores only, some of which would hold an immense quantity of tubers. Such large stores were owned in common by many families, each having its own allotted portion of floor-space. A passage-way was left down the middle of the chamber, and the tubers were piled in carefully built stacks on both sides of such passage, each family's stack being termed a *niho*. The floor-space allotted to a *whanau* (family, or family group) was termed a *tawaha*.

Prior to stowing away the *kumara* crop, the floor of the *rua* was covered thickly with dry *manuka* brush and fronds of *rarauhe* (*Pteris aquilina*), the same material being placed along the walls so as to prevent the tubers coming into contact with the earth. In commencing to store the season's crop, the stacking of the tubers in a *rua* was commenced at the inner end or back of the pit, where a *niho*, or stack, was made in the right-hand corner. Then one

was made in the left-hand back corner, and so on, building out towards the front of the pit. Even in small pit stores the tubers were piled in separate stacks, although the stacks were close together, so that a stack might be all used ere another was commenced. When stacked by an adept all sides of each stack were vertical, and the stacks needed no side support whatever. In the large *rua tahuhu* each family built its own *niho*, or stack, on its own *tawaha*, or division of the pit, entirely independent of those of its neighbours. No partitions were erected, but each family *niho* was stacked up with vertical sides and face, and as deep as the space between the pit-wall and the central passage. Such a depth might be 4 ft., 6 ft., or 8 ft., and the height about 5 ft.; the width depending upon that of the *tawaha*, which might be regulated by the number of persons in the *whanau* (see above). But although the stacks are piled separately, so that each could stand alone, yet no space is left between them, lest rats enter therein and work havoc. When stacking the tubers every endeavour was made to close any hole therein by which a rat might enter, small-sized tubers being inserted into such apertures. All this was with the view of compelling any raiding rat to attack the outside of the stack, where the damage wrought would soon be detected. When a stack was removed the neighbouring one stood intact, without crumbling down.

In stacking the tubers, each one was lifted separately and placed in position, the operation being described by the word *whakapipi*. The *niho* were, as a rule, about 3 ft. in width, and, in the smaller pit stores, would not be more than 3 ft. to 4 ft. deep—*i.e.*, from wall to passage-way.

The smaller *rua*, made for the use of one family, were not termed *rua tahuhu*. The space immediately inside the doorway of these smaller *rua*, on both sides, was termed the *kerepeti*, whereat were stored the finest and largest tubers specially selected in the sorting, and which were kept for distinguished visitors. Back of this space the bulk of the crop was stored. In *rua tahuhu* no *kerepeti* was used, but each person sorted out his tubers and placed the large ones together so as to be accessible when required. The process of sorting the *kumara* was termed *kopana* or *mahiti* (*ka mahititia nga kumara rarahi, ka kopanatia nga kumara pakupaku*). The very small *kumara*, termed *takora*, were not stacked, but put aside for immediate use. Very diminutive tubers, mere root-like items about as thick as a lead-pencil, called *hekerau*, are, as a rule, not used, but thrown out to pigs.

Small enclosures, such as divisions in a potato-store, are termed *pakorokoro*.

The *rua tatara* was so called from the manner in which its contents were protected from rats. The pit was of the dug-out type with a $\wedge$ roof over it, and excavated on the edge of a terrace or hillside. At a little distance away a ditch, perhaps 30 in. deep, was dug round it. Then, on the inner side of the ditch, a series of short stakes were stuck in the earth so as to project out over

the ditch in a horizontal position, but not too far. On the top of these sticks sheets of bark were laid, on which was put a layer of earth. Rats getting into the ditch and climbing up the inner side thereof were unable to pass the roof-like *tatara*, as the above-described protection was termed. Thus the rats were unable to approach the store-pit.

Archdeacon Williams gives *tatara*, pointed pegs placed horizontally in the eaves of a *rua kumara* to keep out rats.

The well-like pits or holes made in the ground and entered from above through a trap-door are termed *rua kopiha* among the Ngati-Porou Tribe, but they were not much used by those folk. They are used for potatoes as well as for *kumara*. These underground chambers were sometimes square, sometimes round. Short ladders were used as a means of descending into them.

To cover a *rua kopiha* four short wide pieces of slab were laid at the edges of the square entrance-hole, placed so as to slope downwards away from the entrance. Then a very wide slab was laid over these, so as to cover the entrance-hole. Rain-water runs off this on to the sloping *pae* or border-slabs, off them on to the ground, a small ditch being formed in the earth round the pit to run such waters off. The expression *rua kopia*, occasionally seen, should be *rua kopiha*.

The *kumara* was always stored in these pit stores, never in an ordinary hut or *pataka* (elevated storehouse), as they would not keep in the two latter structures, but would soon decay. Natives say that it is the warmth of the pits that preserves the tubers. Of course, some might be placed in a *pataka* for immediate use.

The store-pits were never fenced in in former times, for there was no animal that could molest them except the rat, which gave a good deal of trouble. In some cases a *rua tahuhu*, or the smaller ones of similar form, had their walls lined with *turihunga*, or slabs of tree-fern, in which case no rat could enter. When not so lined, rats sometimes burrowed through the earth and entered the pit.

The space within a *rua tahuhu* between the front wall and the central-ridge-post (or first of the intermediate posts) is termed the *moana*.

Owners of a *rua* often inspected its contents to see if there was anything wrong that might cause decay, such as *waitau*, or moisture, that sometimes was seen collected on the ridge-pole. On fine bright days the door was often left open until the sun went off it. If any moisture dripped on to the *kumara* it would cause them to decay.

In the case of *rua* or semi-subterranean stores being made in level land, the ground would be so manipulated as to slope away from the store in all directions, so as to run off all storm-waters, also a porch would protect the entrance of the store.

In some cases, when a man had stacked his crop of tubers in his pit store, he would obtain the services of an adept to recite over it certain charms to prevent the decay of his stored food products, and to slay or render demented any person who entered the pit to steal its contents. Also, when a man left his house for some time, he might secure the door of his store-pit in some peculiar way in order to detect any interference with it, or he might so charm it that if a thief entered it he would at once become demented, and would wander about shouting "*Kumara! Kumara! Kumara!*" Says Tuta, "I saw many persons so afflicted in my youth." In tying the door-fastening of a store the final knot made with the cord was sometimes a very complicated one. In the case of a store being plundered, when not protected by the dread arts of black magic, the owner would obtain the services of a *tohunga*, or shaman, who performed a certain rite at the plundered place that would render the thief demented wherever he might chance to be, and he also would wander around the hamlet calling out the word "*kumara*," or such a sentence as "*Naku tonu aku kumara, kumara, kumara.*"

It sometimes occurred that caves were formed in cliffs, with a door fixed at the entrance, to serve as storage-places for *kumara.*

It might happen that a man had a quantity of tubers to store for which he had no storage-room, in which case he made a *tawaero*, as it was termed. He formed a raised foundation of earth in a circular form, about 1 ft. high at the edge but hollow in the middle. A layer of dry *manuka* brush and rushes was laid on this, and then the *kumara* were carefully stacked up on this foundation in the form of a solid cone, coming to a point at the top. Dry *manuka* brush was then placed round and against it, then a layer of *toetoe* leaves, after which earth was heaped up against it all round so as to cover it. At the base of the foundation a small ditch was made to carry off storm-waters.

Mohi Turei, of Ngati-Porou, speaks of the *rua tawaero* as though it were a shallow circular pit lined with *toetoe* leaves, and the heap of *kumara* covered with a thatch of the same material. Such a heap of *kumara* is termed a *rua whakatoke*, but if potatoes are so stored it is termed a *rua tawaero.* Such a shallow basin-like pit was made on rising ground, as on the top of a knoll, if convenient. The *rua tawaero* was sometimes made of an oblong form.

In Major Heaphy's account of his exploring trip down the west coast of the South Island he describes the method adopted by his native companion for preserving provisions from the destructive rat: "To outwit his old enemies the rats, Kehu buried the provisions, nicely lining the hole with bark, covering the place over with ashes—a proceeding which we certainly should not have decided upon for security against burrowing animals, but which he knew was effective."

The *rua kaupapa* is not a pit, but the name is applied to a heap of *kumara* or potatoes piled up on the surface and covered with earth, having no erection over or around it. *Cf. koputu.*

In his district, says Tuta, *taro* was not stored in the above-described store-pits, but in holes dug in the ground some 2 ft. or 3 ft. in depth, in which the *taro* were placed, then covered over with a layer of *tutu* leaves, and those again with a gravelly soil. The leaves decayed, and had some effect in preserving the crop—that is, in keeping them damp. *Taro* decayed if stored in too dry a place.

The *rua-roa* was a tunnel-like hole driven into a hillside, the entrance thereto being fitted with a door. In some cases short branch tunnels or drives were made from the main drive. Should the material be inclined to slip or cave at any spot, it was confined by means of lagging, termed *takitaki-a-manu.* These store-places were used in olden days, and were often quite dry. Cliffs composed of an indurated form of pumice were favoured places for such stores. The edible roots of *Pteris aquilina*, termed *aruhe*, were often placed in such a pit, and covered with earth to prevent them becoming too dry.

The *rua kopiro* was a pit in the ground into which water was conducted, and in which *hinau* berries were steeped, and, in later times, maize.

Such are the notes supplied by Tuta Nihoniho concerning the modes of storage in excavated pits on the east coast of the North Island, and it is the most detailed and satisfactory description we have received. Our informant has ever displayed a keen interest in our Bulletin work, a strong desire to put such matter on record, and a wondrous patience in explaining details to a dense-witted member of an alien race.

NOTES ON MAORI FOOD-STORES, BY ARCHDEACON WALSH.

In his paper on the "Cultivation of the Kumara," published in Volume xxxv of the "Transactions of the New Zealand Institute," Archdeacon Walsh makes the following remarks on the storage of the crop:—

"The storing of the crop required the greatest care and judgment, as, in spite of every precaution, it was barely possible to preserve the stock until the next planting-time. Besides being a delicate article to handle, the *kumara* is susceptible to every change of weather. A single bruised or chafed tuber will soon rot and communicate the decay to those in contact with it, while a very short exposure to damp, or even to cold air, will quickly spoil the whole lot.

"In constructing their storing-places the Maoris followed no uniform fixed pattern. As was usual with them, the idea they had in their minds was worked out subject to local conditions, and, as these varied more or less in every locality, it is not surprising to find a corresponding variety in their appliances.

"The chief question being the exclusion of damp and the maintenance of a moderate and even temperature, the object was very simply attained in a dry porous soil by the *rua*. This was a circular pit sunk in the ground 5 ft. or 6 ft. deep, and about the same in diameter, narrowing in at the top, and closed by a trap-door made of a wooden slab. The tubers were handed down to a person standing in the middle, and were piled radially around the sides on a bed of soft fern or *Lycopodium* (*waewae koukou*), a layer of the same material being placed between them and the wall. If sufficient accommodation was available only one pile was made, as they kept better if not packed in too large a mass. The enormous number of these *rua* on the volcanic plains of Taranaki and elsewhere shows the extent of former plantations.

"In situations where the soil was not sufficiently porous to allow the *rua* to be self-drained it was built partly above ground, generally on the slope of a hill. The pit was dug 2 ft. or 3 ft. deep. . . . An outfall drain was made from the bottom, and a surface channel round the top carried off the storm-water. A roof was made over the pit, the rafters being set in the ground at an angle of about 30°, and covered with sticks and fern, on which was piled a thick layer of earth, and the whole was coated with fronds of *nikau* to preserve the earth from the wash of the rain. The entrance was made in the outfall drain, and was closed with a movable wooden slab or sliding-door.

"Very frequently, however, the storing-place was entirely above ground. A small house was built, with the walls about 4 ft. or 5 ft. high. These were framed of dressed slabs set vertically in the ground, with battens lashed on horizontally at intervals of a few inches, and covered over with two or three thicknesses of *raupo*, so as to be completely airtight. *Mangemange* (a kind of climbing-fern) or sheets of *totara* bark protected the lower part of the walls, and against this the earth was thrown up from a ditch sunk below the floor-level, which acted as a drain for the building. The roof was framed in a similar manner to the walls, and also covered with *raupo*, sometimes with an inner sheeting of *totara* bark, while an upper layer of *toetoe* grass, secured by ropes of *mangemange* or wooden battens, preserved the *raupo* from the wet. A door was generally placed at each end, so that, in order to prevent the wind blowing in, the house could always be entered from leeward; and the opening was made just large enough to allow a man to creep in on all-fours. This class of storehouse was always a conspicuous and picturesque object. They were often ornamented with elaborate carvings, inlaid with *paua* shell (*Haliotis*), and finished off with a *tekoteko*, or grotesque wooden figure, set up at the apex of the roof.

"Sometimes the storehouse was set up on legs 3 ft. or 4 ft. high, when it was called a *pataka;* and, as the imported rat found its way into the settlements, precaution had to be taken against its incursions by socketing the tops of the legs into heavy cross-pieces of timber hollowed out like sections of an inverted canoe.

"When only a small quantity of tubers had to be dealt with, a very simple device called the *whakatoke* was sometimes adopted. A shallow circular depression made in the ground was covered with a layer of long stalks of the common fern (*Pteris aquilina*), with the roots meeting at the centre and the heads radiating outwards. On this were piled about half a dozen baskets of tubers. The heads of the fern were then bent upwards and inwards so as to enclose the lot, and were tied together over the top. The whole was then covered with *toetoe* grass, and a layer of earth was thrown up from a trench round the outside.

"There were other modes of storing, which were variations or adaptations of those mentioned, in all of which the Maoris were guided by local circumstances. Sometimes the pit was made inside a large shed, and sometimes it was driven horizontally into the face of a steep bank. Occasionally the tubers were placed on a raised platform (*whata*) and covered with mats and fronds of *nikau*, while in some rare instances the storehouse was built in the forked branches of a tree."

The writer then quotes an item from Colenso's remarks on these stores: "All these storehouses were rigidly *tapu*, as were also the few persons who

were allowed to visit them for any purpose, all visits being formal and necessary. The labour bestowed on them in those early times, before the use of iron, was immense, and they were mostly renewed as to the reed-work every year."

The above is an excellent description, for a brief one, of the various styles of storage-places used by the Maori in former times. The writer does not, however, tell us which tribes the notes were gathered from; some of the forms described are probably northern usages. The circular *rua* or pit described was by no means a universal form, many of such being square, as seen on the east coast. The semi-subterranean stores described in the fourth paragraph were rectangular, and in many cases were made on the summits of spurs or ridges; we have seen the remains of hundreds so situated, many on sharp razorback spurs, where drainage was an easy matter. The storehouse wholly above ground was certainly uncommon, and, we believe, unknown in many districts—that is, as a *kumara* store. The two-door system also was probably confined to certain tribes or districts. In regard to the *pataka* and *whata*, these were not erected or used as *kumara* stores in most districts though a few for immediate consumption might be put in such places. Precautions against the entry of rats had to be taken in pre-European times, though the imported rat is a much greater nuisance than ever the native rat was.

Though the Dominion Museum has a fairly good collection of photographs of the highly ornate carved *pataka*, and of parts of such buildings, yet illustrations of more common forms are decidedly scarce. Hence we have but few representations of the ordinary plain, unadorned, elevated storehouses, and none of the inferior ones occasionally seen, in the construction of which a framework of poles was erected and covered, walls and roof, with a thatch of coarse grass or bulrush. Such common objects do not appeal to the photographer. The ordinary *pataka* of to-day, although useful as of old, bears a different aspect to the old-time ones, on account of certain European innovations, such as sawn boards, shingled roofs, &c. To judge from the illustrations of canoes, houses, and *pataka* met with in works dealing with the Maori, one might naturally suppose that the majority of such items are, or were, superior structures highly embellished with carvings, whereas the reverse was the case. This should be distinctly understood. It is on account of the uninteresting aspect of common *pataka*, platforms, pit and cave stores, &c., that we possess so few illustrations of them.

We have, however, shown in the preceding pages how the Maori stored his food products and miscellaneous goods, and that the highly ornamented storehouse, the carved designs of which would represent some years of tedious labour, was not a common object, and no whit more useful than a plain unadorned structure.

The subject treated on in this bulletin — viz., the storehouses, platforms, and pits used by the Maori people—may possibly be deemed unimportant and unattractive, but it includes and illustrates some of the most skilful work performed by the old-time Maori, and also throws light on other phases of their industrial life. That life, together with their social customs, can only be satisfactorily understood after an intensive study of the material before us—a study which it is hoped that the publication of this bulletin will aid.

CENTRAL PLANK OF PATAKA, SHOWING DOORWAY.

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NEW ZEALAND.

DOMINION MUSEUM.

BULLETIN No. 6.

THE PA MAORI

An Account of the Fortified Villages of the Maori in pre-European and modern times; illustrating Methods of Defence by means of Ramparts, Fosses, Scarps and Stockades.

By ELSDON BEST.

PUBLISHED UNDER THE DIRECTION OF
THE BOARD OF MAORI ETHNOLOGICAL RESEARCH, FOR THE DOMINION MUSEUM.

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PREFACE

This bulletin contains not only a general account of the ancient Maori fort or *pa*, with its later modifications, but gives detailed descriptions and plans of the earthworks of numerous individual *pa*, many of them famous in Maori history. It is hoped that these will stimulate an intelligent local interest in these historical monuments, leading to their better protection and conservation. Only a small proportion, however, of ancient *pa* has been noticed here, and there are probably many other well preserved earthworks which are worthy of survey and description.

Mr. Best's suggestion of a relationship in origin between the *pa* of the Maori and the hill forts of Fiji will not escape criticism from Polynesian scholars, but if it serves to bring forth more adequate accounts of the methods of fortification in Polynesia, it will have served a useful purpose.

The illustrations comprise reproductions from early books on New Zealand, and in addition a number of original illustrations by Mr. J. McDonald and Miss E. Richardson.

J. ALLAN THOMSON,

Director.

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The Pa Maori

AN ACCOUNT OF THE FORTIFIED VILLAGES OF THE MAORI IN PRE-EUROPEAN AND MODERN TIMES; ILLUSTRATING METHODS OF DEFENCE BY MEANS OF RAMPARTS, FOSSES, SCARPS AND STOCKADES.

PART I.

INTRODUCTORY REMARKS.

CONTENTS.

Interesting methods of fortifying villages not yet thoroughly described. Mr. Skinner's paper the only comprehensive one. The *pa maori* a minor feature in Polynesia. Sources of information. Great number of remains of fortified positions. Numerous in certain districts. Observations of Sir Joseph Banks. *Pa* hunting. Wellington district. Plan of Manu-korihi *pa*. Model *pa* at Rotorua. The *pa* of other lands. Neolithic forts of England. Ireland heads the list. Names of different styles of Maori forts. Classification of *pa* according to site and mode of defence. Methods of fortifying villages. Irregular contour of defensive works. Maori mode of life. Open villages and fortified refuges. Hill forts. Observations of Judge Maning; Of L'Horne. A mile long fortified village. Whakawhitira. South Island data. Extensive fortified village at Poverty Bay. Remarks by Jameson; by Polack; by S. P. Smith; by Marsden; by W. H. Skinner. Fortified mounds. Evidence of Cruise, Angas and Earle. Hill site ever preferred. How defensive lines were marked. No hard and fast rule for defensive works.

THE Maori folk of New Zealand have long been viewed as affording an interesting field for study, principally on account of their interesting mentality, their decorative art, and the fact that they represent a courageous race of explorers and deep-sea rovers whose original homeland has not been fixed. In the following pages we hope to show that there are other subjects pertaining to the Maori that are well worthy of study, and not the least of these is his old time system of fortification.

It is a curious fact that so little has been placed on record concerning the *pa maori*, one of the most interesting works of the natives of these isles. The extracts dealing with the subject in this paper have been culled, as the acknowledgements show, from many different works. All these descriptions are incomplete, many of them mere fragments, and so no writer has described in detail the various forms of fortified places constructed by the Maori in pre-European days. It is now too late to obtain a thoroughly detailed account of the old time *pa*, though much might be done by means of studying the remains of such places so numerous throughout the North Island, and by patiently and ceaselessly pursuing inquiry among the older generation of natives now living.

The only complete and concrete paper describing any form of *pa* is that written by Mr. W. H. Skinner descriptive of the form of fortified place formerly constructed by the tribes of the Taranaki district, and published in the *Journal of the Polynesian Society*, vol. xx. p. 71. This is so good a description that we propose to insert it in its entirety. It will be found under the heading of Hill Forts.

One of the most interesting features of our subject is the fact that such fortified places as were so numerous in the North Island in former times, were but little known in the isles of Polynesia. Hence the Maori immigrants from that region must have developed the local forms of fortified villages, or adopted a system practised by another people. The hill forts of Viti Levu, Fiji, seem to have closely resembled those of the Maori, and certain parallels are also found in New Guinea. At the Tongan and Marquesas Groups a few fortified places possessing some Maori characteristics were seen.

In describing the *pa maori,* or native fortified place, as it existed prior to the introduction of firearms, I have had to rely upon data contributed by natives, the few and incomplete descriptions given by early voyagers, and examination of the remains of such works. A considerable number have been explored, but in many cases no measurements or other notes were taken at the time. Those described and illustrated in the following pages give a fairly good idea of the different methods employed by the Maori in fortifying his villages, but a vast number of highly interesting old forts still remains to be examined and described. Fortified positions, some showing unique features, are being discovered as the back country is cleared of forest growth. Much data of interest might be gained by means of an examination of the sites of such old forts, many of which, so far as the earthworks are concerned, are in an excellent state of preservation, and it is to be hoped that some one will yet make a careful study of such remains, and publish the results thereof.

The number of old earthwork fortifications seen in the North Island is very remarkable, and there must be thousands of such remains scattered over the country. They are exceedingly numerous in some areas, such as the Taranaki coast, the far north, and the Bay of Plenty district; while in others, such as the Wellington district, they are very rare. In this latter case, the scarcity of such remains is accounted for by the fact that the district could never have supported any considerable native population, and because the formation of the country forced the people to depend upon stockade defences to their hamlets, hence but few signs of old earthworks are seen in the district.

A great number of old pre-European forts is to be seen on the west coast of the North Island, from Whanganui northward to Kawhia. Another series is found in the Bay of Plenty from Tauranga to Matata, and again on the coast line from Whakatane to Opotiki and onward round the eastern shore of the Bay. In the vicinity of Whakatane alone, including the hills bounding the valley, nearly 100 fortified places are known to exist, over eighty having been marked on certain maps. The Auckland isthmus shows some of the finest specimens of terraced hills, while the Hokianga, Taiamai, Oruru and other districts of the far north contain a great number. Other parts of the North Island show similar remains in lesser numbers, but the South Island has few.

In writing of the Hauraki Gulf, Mr. F. H. Bodle has remarked that the shores of the lower part of the gulf show the remains of a great number of old *pa*:—"At one time this gulf shore must have supported an enormous aboriginal population. Every hilltop, every point of vantage, is carved and terraced into forts and watch-towers, not only along the coast, but for miles inland. Not only this, but every foot of valley land was dug and drained, and the stones carefully removed and piled in heaps."

A most interesting series of old forts is to be seen in the Oruru valley, between Mangonui and Kaitaia, and some eight or nine miles from the former place. On a range about half a mile from the road almost every peak has been scarped and terraced, for a distance of several miles. Many others are seen from the road between Kawakawa and Hokianga.

The remains of old *pa* on hilltops are usually distinct, and the defensive works easily traced, but on flat land of a sandy nature, as on the coasts, the sites of many old fortified places have been covered and obliterated by drifting sands. Again, many *pa* so covered are now hidden also under a dense growth of scrub, etc., and when such growth is destroyed by fire, or stock, the winds, in some cases, remove the drift and expose the old village site.

A perusal of this paper will tend to show that, though *pa* were, if possible, built on hills or other elevated places, yet the people thereof might live much of their time outside such defences. At certain times, when not threatened by enemies, these people spent much of their time in unfortified hamlets, merely retiring to their *pa* when expecting to be attacked. Such hamlets might be surrounded by a fence or palisading, but could not be termed fortified places. A close observation of the Wellington and Porirua districts has convinced me that the native population of those places in former times lived much of their time in places that could scarcely have been defended against an enemy.

In the Journal of Sir Joseph Banks we note the following remarks pertaining to this subject:—"Of these forts or towns we saw many; indeed the inhabitants constantly lived in such, from the westernmost part of the Bay of Plenty to Queen Charlotte's Sound; but about Hawke's Bay, Poverty Bay, Tegadu and Tolaga [Uawa], there were none, and the houses were scattered. There were, indeed, stages built upon the sides of hills, sometimes of great length, which might serve as a retreat to save their lives at the last extremity and nothing else, but these were mostly in ruins. Throughout all this district the people seemed free from apprehension, and as in a state of profound peace; their cultivations were far more numerous and larger than those we saw anywhere else, and they had a far greater quantity of fine boats, fine cloths, fine carved work; in short, the people were far more numerous, and lived in much greater affluence, than any others we saw." Coming from a writer who accompanied Captain Cook on his first voyage, this evidence is of interest, as showing that many of the East Coast natives must at that time have been living in unfortified places, though we feel assured that they had strongholds on adjacent hills to retire to when threatened by enemies. The stages mentioned were, presumably, platforms (*whata*) for the storage of food supplies, etc. The same writer mentions that many inhabited places, fortified with fosses and stockades, were seen about East Cape. The remains of old *pa* are seen in the districts mentioned by him, and we know that these voyagers did not even land on the shores of Hawke's Bay.

In connection with the collection of information concerning pre-European native usages from the Maori of to-day, I may quote a remark made in my hearing, when a native, apparently some 30 or 35 years of age, said to old Tuta Nihoniho:—"I suppose that the Maori did not build *pa* before firearms were introduced." This from a man who has been looking upon old pre-gun forts all his life. So much for the modern Maori.

To any person who takes an interest in locating the remains of old native fortified villages, and in seeking the relics of neolithic man in pre-European middens, there comes the faculty of being able to detect faint traces of old earthworks that would not be noticed by the majority of people. Thus the writer has detected the sites of several old *pa* by noting on range summits against the sky line a peculiarity in the growth of tall fern (bracken), possibly several miles distant. In another case a very old *pa* on a spur face remained undetected for some years, until the writer happened to be riding down the valley one morning when the sun had just risen above the ridge summit. The signs consisted of narrow terraces covered and filled with the debris of centuries, but just a slight hollow remained along the line of each former terrace. When the sun was in a certain position in early morn, these slight hollows were in shadow and so betrayed the presence of man's handiwork. This *pa* site is near Ruatoki. When in Arizona the writer was informed that traces of ancient irrigating canals had been located in that region on moonlight nights in a similar manner.

In the vicinity of Wellington one sees very few old *pa* sites, or rather it is difficult to determine the sites of old fortified hamlets. Owing to the rocky nature of the country in this district, it was impossible, in most places, to construct heavy earthworks, hence in very few places do we note any signs of old forts save the house sites. A small earthwork still exists at the old *pa* at Tarakena, and an old fosse still marks the little *pa* at Worser Bay,

but earthworks are wanting at the sites of many old villages that formerly existed at Hataitai (the Miramar Peninsula). We know the sites of a good many, and these have been carefully gone over by the writer, and nothing found in the form of earthwork defences. All that remains are middens and hut sites, the latter marked by small levelled areas a few yards in length and breadth, and scarcely worthy of the name of terracings. Most of the villages of this district must have been defended by stockades only.

The Wellington district was, in olden days, perhaps one of the quietest parts of the island. Incursions by enemies were infrequent and the natives lived much in small unfortified hamlets, though possessing some stockaded strongholds to retreat to when it became necessary. This condition is accounted for by the fact that the inhabitants of this district were closely related to the people of Wai-rarapa and the east coast, and also with those of the west coast as far as Otaki, also, to a less extent, to those of the districts between Otaki and Whanganui. The news of raiding parties was sent on to the surrounding clans and this was a great safeguard to the folk of the Wellington area. This is one of the reasons why we see so few *pa,* and such diminutive ones, in the Porirua district, Pukerua on one side and Wai-rarapa on the other would send them warning in most cases.

An examination of the coast line in the vicinity of Wellington shows that, in former times, natives have lived much in places that would never have been selected as defensive positions. Thus we see old middens, shell heaps, of considerable size in hollows and the mouths of narrow gulches impinging upon the beach, plainly showing that the natives must have lived much of their time at such places. This evidence is also clear in other districts, notably at Porirua.

Nor do we know that a place occupied by house sites has ever been a *pa,* in many cases, as where no remains of dyke, fosse or stockade are found. It may have been nought but an open hamlet, an unfortified village. In searching for sites of forts in such a place as the Wellington district, it is well to bear in mind the words of the author of *Earthwork of England.*—"It needs a quick eye to see them where they are, common sense to avoid seeing them where they are not"—as also the remark that an antiquary or student of earthwork remains should be cautious, and again cautious, and yet a third time cautious.

Mr. S. Percy Smith has remarked as follows:—"I am only acquainted with one instance in which an ancient Maori fortification has been depicted by plan and sections, and on a sufficiently large scale, though we have several of their later ones modified by the introduction of firearms; and this relates to Manu-korihi *pa,* at Waitara, a work which was performed by F. A. Carrington in the early days of the New Zealand Company. This plan, beautifully engraved, was published in England about 1845."

This lack of plans and sections has been to some extent amended by a certain amount of field work done by the Dominion Museum Department, the result of which is given in the following pages.

The Tourist Department has constructed at Te Whakarewarewa, near Rotorua, what is termed a model of an old time native fort, but the result is a grotesque type of redoubt, in no way resembling the native *pa* of pre-European times. See Fig's. **1** and **2**, p. 5. Another such reconstruction, on a smaller scale, was made by the Tuhoe tribe at Rua-tahuna some years ago, and this is a much better representation. It does not, however, illustrate the more elaborate type of *pa,* being a scarped hill with two lines of stockade and a fighting stage to protect the entrance. See Fig's. **3** and **4**, pp. 6-7.

A newspaper item has turned up which contains some critical remarks made by Tarakawa of Te Puke on the so called native *pa* constructed by the Government at Te Whakarewarewa. The type looks like that of the Auckland Herald. Like most elderly natives, Tarakawa strongly condemned the work, and spoke of it as a European redoubt, and as in no way resembling a Maori fort of olden times. The old man's strictures are as follows:—"The earthwork walls were too upright, and there was no stockade outside them as there should

FIG. 1.—MODEL PA ERECTED AT ROTORUA.

Showing very light modern palisading and rails outside posts, also a fighting stage at angle.

See p. 4. [*J. McDonald, Photo.*

FIG. 2.—ENTRANCE TO MODEL PA AT ROTORUA.

The palisade work here depicted is entirely unlike old work.

See p. 4. [*J. McDonald, Photo.*

[*T. Pringle, Photo.*

FIG. 3.—MODEL PA AT RUATAHUNA.

The levelled summit of the hill would form the residential area. See pp. 4-10.

FIG. 4.—ENTRANCE TO RUATAHUNA MODEL PA. See pp. 4-10.

The illustrations show this *pa* ere it was completed, the second stockade and fighting stage to protect the entrance had not been erected. The stockade is a light one of the low modern type. An elevated stockade (*pekerangi*) was erected in front of it later. [*T. Pringle, Photo.*

FIG. 5.—MODEL OF A PA TUWATAWATA OR STOCKADED VILLAGE CONSTRUCTED BY J. MCDONALD.
Now in the Dominion Museum. See p. 10

FIG. 6.—MODEL PA ERECTED AT THE CHRISTCHURCH EXHIBITION OF 1906. See p. 10. [*Ledie Hinge, Photo.*

have been. In form the place was too regular and rectangular. The interior was too level and the whole place looked more like a stockyard than a native fort. The gateway or entrance was a caricature, and in no way resembled that of former days. No Maori ever carved one like it before. The stockade work was entirely wrong. Only carved main posts (*tukuwaru*) were erected, the intermediate posts (*tumu*) had been forgotten. Also the main posts were too regular in position, and all of one size, shape and height, all foreign aspects to a Maori fort. There should have been four large *aka* (vines) rails lashed to the posts, instead of planed scantling secured with spikes. In olden days, before guns were known, the *maioro,* or ramparts, were very high and wide, and the trenches were deep. Those *pa* were generally built on a promontory, or on the top of a hill, with a number of terraces (*rengarenga*) one above the other, so as not to be taken by surprise, and in order to impede any sudden attack made by the enemy. Since then the Maori has obtained and learnt the use of guns, and found it necessary to alter the old plan of a *pa* into one more suitable to the changed conditions. These latter would be built with bastions (*koki*), with their places (*ngutu-ihe*) to enable the holders to have a full view of the curtain (*tiaroa*) with a double row of palisades, parapets pierced here and there with loop holes (*kotaretare*) for spying out and firing at the enemy, and many other things. I have seen *pa* of the old style, and I saw two *pa* built in 1856, in the fighting against Ngai-Tai.''

The above extracts from Tarakawa's letter are of much interest, but his explanatory remarks are all too brief. He does not make clear what the *ngutu-ihe* is, and the curious application of the term *kotaretare* to a loophole calls for some explanation. His remarks on the dyke or vallum, the mention of *aka* (large tough stems of climbing plants) as being used for rails, and the introduction of bastions or flanking angles in post-gun days, are noteworthy.

The *pa* constructed by the Tuhoe natives at Rua-tahuna some years ago is a much better reproduction of the old Maori fort. See Fig's. **3** and **4**, pp. 6-7. It is a scarped hill *pa,* with two stockades and a fighting stage. The scarp is a deep one and a great protection to the levelled summit of the *pa,* where the inmates would live.

There is in the Dominion Museum a model of a *pa* that was constructed by Mr. J. McDonald. See Fig. **5**, p. 8. It does not represent the better type of fortification, the heavy earthworks and ditches supplemented with stockades, but gives a good idea of the *pa tuwatawata,* or hamlet defended by stockades only. In order to illustrate Maori methods of fortification by means of models, it would be necessary to form four such illustrations in order that the different types might be shown.

Three views are here given of a model stockaded village that was erected at the Christchurch Exhibition of 1906. The stockades are very light ones, and would be better described as fences, hence the place does not represent a pre-European defence. It will also be noted that rails are secured to the outer sides of posts. The three platforms of one of the *puwhara* is also unknown as a pre-European usage; platforms so close together would prevent the use of the long spears of yore. Such erections were, however, sometimes used by gun fighters. See Figs. **6-7-8**, pp. 9-12.

A model of a small modern *pa* is in the Hobart Museum; it is reproduced here in Fig. **9**, p. 13. The defences consist of a double stockade which probably contained a trench, from which the defenders would fire through the outer palisading. The original was probably a hastily constructed place; no strong posts are in evidence.

All students of primitive culture are aware that the *pa maori* or native fort, as described in this paper, is by no means confined to these isles, that it may be termed a cosmopolitan usage, and that similar earthworks, as also stockades, have been employed in many lands. Indeed it may be looked upon as a foregone conclusion that earthwork defences erected by neolithic man in any land would necessarily be much alike. Even the fighting stages over the entrance to a fortified place are known in many lands. We know that certain minor

features were peculiarly Maori, but the ruined dykes and fosses of the old Maori fort are much the same in form as those of America and Great Britain. Remains of some 900 pre-Roman camps have been noted in England, and many more must have been destroyed, Scotland is credited with 1079, and Ireland has an enormous number of such relics of man of the neolithic and Bronze Periods. Many of these old earthwork fortified places date from long before the Christian era. The old forts of England are, in most cases, more extensive than our Maori forts, and have heavier earthworks. They are usually situated on hills, some on promontories, some on hillocks, that, in those far off days, were islands in lagoons or swamps. Terraced hill forts are also known, as shown in A. H. Allcroft's most interesting work *Earthwork of England*. In some cases the earthworks show ingeniously guarded entrances, and it has been found that circular huts with extremely small doorways and deeply sunk floors were used, as also pits for the storage of food supplies.

The size of some of the old earthwork forts of England is startling to us; thus one at Ham Hill, Somerset, has an area of 210 acres. Its earthworks are enormous. Another in Shropshire covers upwards of fifty acres, and has five lines of earthen ramparts and fosses.

Another old English *pa*, Maiden Castle, had five miles of earthworks. These dykes of old forts are believed to have been surmounted by stockades, indeed the remains of posts have been found in some of them. Of the entrances to these forts, Allcroft writes:—"The ingenuity of the builders was chiefly exercised in making the entrances difficult and dangerous of access."

In describing the earthworks known as Maiden Castle, situated about two miles from Dorchester, England, the authors of *Neolithic Dew-ponds and Cattle-ways* enlarge on the defences of the entrance as follows:—"The complexity of the maze of stupendous earthworks by which the entrance is guarded baffles description. It suffices to say that an approaching enemy, furnished only with such weapons as were known to primeval man, must have found the place impregnable.....every inch of its lengthy and tortuous course is dominated by a succession of spurs and embankments on either side, so arranged that tier above tier of the defending forces would be continuously encountered." It is also pointed out that an attempt to enter the fortress from any other point would demand the scaling of great embankments, even now 50 to 60 feet in height, with steep scarps, in the face of the defenders; there being three or more of such ramparts.

This fortified area contains 40 to 50 acres. The authors of the above work hold the view that the inhabitants of the district in neolithic times kept cattle within lines of earthworks, to protect them from wolves at night, and that these folk constructed the curious dew ponds of that region in order to conserve water on the streamless downs. The people are supposed to have lived within the inner earthworks, while the cattle occupied the outer area.

A remark by Greenwell reminds one of Whakatane:—"In Northumberland every hill end has its place of defence, in some instances two or three in connection." I have been told that, from the summit of a hill called Simonside, near Elsdon Tower, one can see old fortified places on nearly every hill top in view. Their history is unknown; the folk who constructed them are unknown.

Allcroft also speaks of the numerous remains of old cooking places found in Great Britain. These are in the form of pits, and this writer states that water was conducted into them from an adjacent stream. "In the pit they laid their meat, and brought the water to boiling point by flinging in stones made red hot in a fire close beside it." This looks a most improbable procedure, and it is more likely that the method employed was the *hangi*, or steam oven, of Polynesia, which was certainly used in Scotland. In this mode the fire is kindled in the pit and the stones heated therein, after which they are sprinkled with water to generate steam, covered with leaves or other herbage, the food placed thereon, then all carefully covered with leaves, etc, and earth to contain the steam. A passage in Ossian refers to this method. In describing pre-historic huts of Dartmoor, this writer remarks

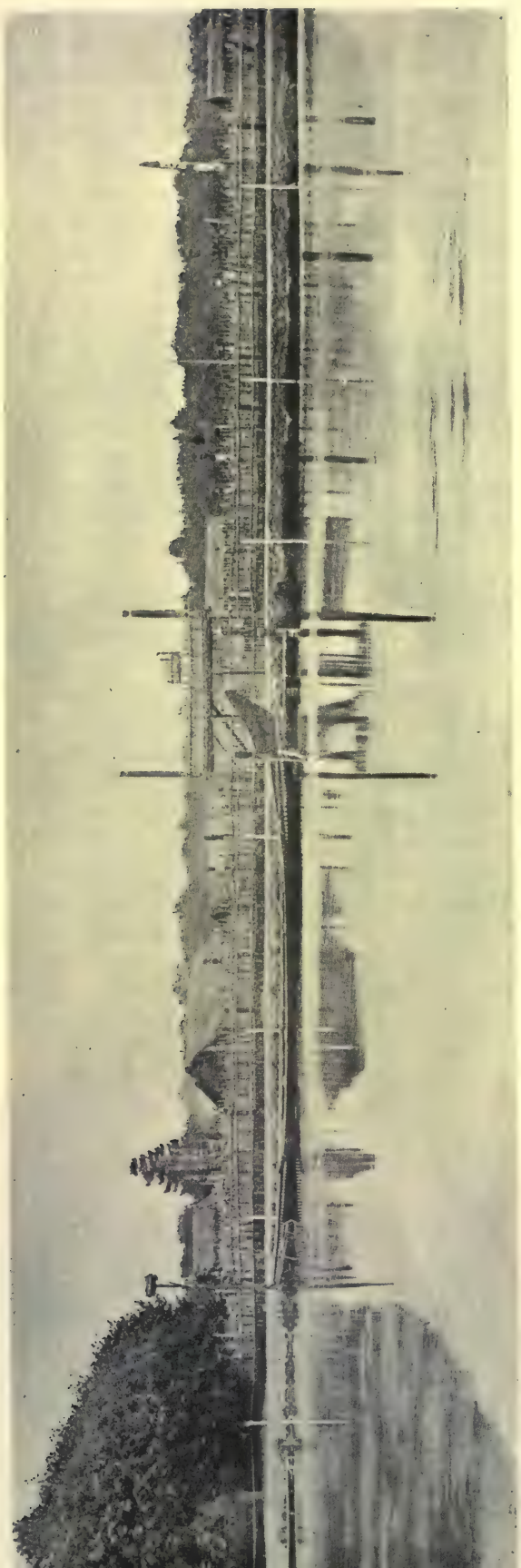


FIG. 7.—MODEL PA AT CHRISTCHURCH. VIEW OF LAKE FACE OF PA. See p. 10.

FIG. 8.—ANOTHER VIEW OF MODEL PA AT CHRISTCHURCH. See p. 10.

[*Leslie Hinge, Photo.*

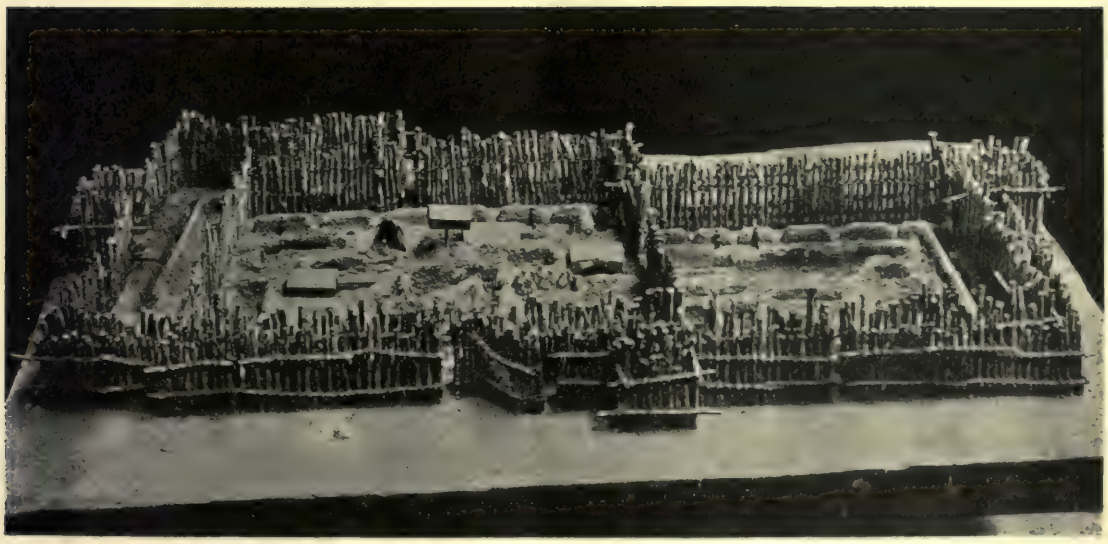


FIG. 9.—A MODEL OF A MODERN PA IN HOBART MUSEUM.

See p. 10.

that most of them contained both a hearth and a cooking pit. "These pits were mere holes sunk into the floor, not more than 2 ft. long, 1½ ft. wide, and 9 in. deep. Numbers of cooking stones, much fired and cracked, were found." As these pits could scarcely have been fed by running streams, he thinks they were filled with water by hand, but it is pretty certain that they were steaming pits, not boilers. Many such cooking pits are seen about old Maori forts.

A. H. Allcroft also tells us that he has located many sites of old time occupation by neolithic man and Roman invaders by means of the burrowing of rabbits. These creatures bring to light not only such evidences as pieces of pottery and flint chips, etc., but also manufactured implements of divers kinds. In like manner the writer of this paper has located old pre-European native settlements in the Porirua district, where old middens are completely concealed under a close sward of grass.

Writers describing the old earthwork forts of Ireland tell us that the plan is based on the physical conditions. The simplest type is the enclosure, circular or oval, of the ring mound or ring wall. Variants have two or more walls or earthworks and fosses, up to five or seven rings. This type of fort is widespread, occurring in Thessaly, Bosnia, Herzgovina, Austria, Germany, Holland, Belgium, Sweden, Isles of the Baltic, Switzerland, France and the British Isles. The second type may be called a promontory fort. Worth Head near Weston Super Mare has seven fosses and a partition of loose stones. Ireland has thousands of these old forts, one writer says about 20,000.

In studying the Maori forts of yore and noting their great diversity of form, we shall see that the above remark, *viz.*, 'The plan is based on the physical conditions' will explain such differences. The character of the soil affected the form of the defensive works, but not so much the contour of the fort. Hills composed of such light, loose or friable material as sand and certain forms of volcanic ejecta, did not lend themselves to the formation and durability of fosse and parapet, hence the terracing system was employed on such sites.

The following terms were employed by the Maori to denote the various forms of fortified places:—

Pa taua.—Denotes a fortified place. A generic term.

Pa whawhai.—Cf. *pa*—to obstruct. Any barricade or screen may be described as a *pa*, but *pa taua* implies something to obstruct enemies, while *pa whawhai* may be rendered as 'fighting *pa*.'

Pa maori.—Literally 'native fort.' Any fortified hamlet is included in this term.

Pa maioro.—Earthworks, both rampart and fosse, are termed *maioro*. Hence a *pa maioro* is a fortified place the defences of which are earthworks (stockades being an additional defence).

Pa tuwatawata. Pa tiwatawata.—A fortified place having no earthworks; stockades being the form of defence employed.

Pa kokori. Pa korikori.—These terms were applied to any defences of an inferior nature, such as a few huts surrounded by an ordinary type of palisaded barrier. Such places were often constructed at cultivation grounds away from the fortified village, and at fishing camps on the coast.

Pa tahora.—Applied to *pa tuwatawata* or any inferior type of defended position situated away from the main *pa* of the clan.

Pa whakairo. Pa whakanoho.—These terms imply a first class type of fortified village, defended by earthworks and stockades. Such *pa* had some of the stockade posts embellished with carvings, hence the term *whakairo*. They were also protecteed by a *mauri*, a material symbol that served as a shrine for certain *atua* or spirit gods who were placated in order that they might act as guardians of the place. The inferior type of *pa* had no such protection, not being provided with a *mauri*.

Pa punanga.—A term applied by some clans of Wai-rarapa, etc., to retreats or places of refuge provided for non-combatants in war time, as when a district was invaded. These places were often situated in the depths of the forest. Survivors of a defeated force often retired to such places. The two islands in Wellington Harbour were sometimes utilised as places of refuge for non-combatants when the villages on the mainland were attacked. It would appear that many of these places of refuge were not fortified in any way. Major Large informs me that the term *punanga* means a stronghold in the Cook Islands dialect.

Pa ukiuki.—This expression denotes a permanently occupied fort.

The word *pa*, as a verb, means 'to obstruct, to block up'; as a noun—'fortified place, stockade, barricade, screen.' Also it carries the sense of enclosure. These meanings seem to be fairly general throughout Polynesia. The term *maori*, as a word of the vernacular, means 'native,' hence *pa maori* = native fort. Max Muller tells us that *pa* is a word that is the origin of terms for 'father' and 'fort,' as in the sense of protector.

Special names were assigned to nearly all fortified hamlets and villages, such names being distinct from the name of the place whereat they were situated. Thus nearly every *pa* had its proper name, though the names of some that have been long abandoned are now forgotten and they are known by the name of the place. The superior posts of the main stockade, the upper parts of which were carved into grotesque human figures, were usually named after ancestors of the inhabitants. The superior dwelling houses, storehouses and storage pits within the fort also received special names.

Certain ceremonial observances pertained to the construction of a first class fort, and this paper contains some account of ritual performances observed on the completion and opening of such a place. Attention is directed to this ceremony as being of much interest.

Types of Fortified Positions.

The great majority of old native fortified places can be placed under two headings, *viz.*, hill forts and fortified positions on flat land, the former embracing four sub-types so far as site is concerned. There are also two other forms that occur but rarely:—

1. Fortified positions on flat land.
2. Hill forts:
   - A. Fortified positions on ridges and spurs.
   - B. Fortified isolated hills, peaks, and hillocks.
   - C. Headland or promontory forts.
   - D. Cliff forts, often having few artificial defences.
3. Island forts or refuges, including swamp strongholds.

With regard to the forts situated on flat land it may be explained that, in nearly all cases, one face at least impinges upon a river, stream, hollow or bluff, in very few instances was a *pa* constructed on flat ground with a level unbroken area all around it. Thus a fort may contain and be almost surrounded by level land and yet have on one face a perpendicular cliff, or more or less abrupt slope to a river, gulch, or lower flat. Some of the headland forts, as those on points projecting from a terrace or plateau, enclose level land that is merely a continuation of the terrace. The Manu-korihi *pa*, described in the following pages, is a good example of a flat land fort though it impinges upon a precipitous cliff.

Of the hill forts those coming under sub-division A are of several forms, for the summit of the ridge may be level or it may be irregular, consisting of alternate knolls and hollows or saddles. In some cases such a ridge summit had several of such rounded hills strongly fortified, while the intervening hollows were occupied as residential areas, but were abandoned in the event of a strongly pressed attack. The Tapa-huarau *pa* at Ohaeawai, herein described, is of this type. Te Poroa at Opouri-ao is another picturesque example of these fortified ridges, the earthworks extending for a considerable distance. Again we encounter

many fortified places situated on downward trending spurs. Some of these side spurs so utilised have quite a sharp fall to valley or flat, but in all cases the Maori engineer has sought a place thereon where the spur crest formed a knoll with a low saddle on the upper side, whereat strong defences might be constructed at this up hill end of the fort. When such a knoll and saddle were not available, then the upper defences were located at a place where the spur summit was level for some distance, and across this part fosses were excavated and supplemented by ramparts, scarped faces and stockades. The Tunu-haere *pa* at Whanganui belongs to this type.

The B type of hill forts may be isolated hills or buttes surrounded by flat or rolling land, high lying peaks of ridges, or small hillocks on level land such as are seen in numbers on the Taranaki coast. Again, in some cases, the lower end of a spur develops into a small hill with a very low saddle on the upper side, thus bringing it under the aspect of an isolated hill. The *pa* at Te Koru, hereinafter described, is an illustration of this type. Pohokura and Pahi-tere are examples of the hillock or mound forts; the volcanic cone forts of the north show us large isolated hill forts; while Nga Puke-pango and Tapa-huarau present different forms of fortified ridge peaks. Of the fortified isolated hills some present the form of short ridges, such as Urenui, others are of rounded or conical form, as Tirohanga, near Opotiki.

In sub-division C we have promontories almost surrounded by water, such as Mawe at Omapere, and Maori Head at Napier, while others are situated on points projecting from plateau, such as Pari-hamore and Te Kawa, without any water front. This latter type is liable to impinge upon that of sub-division A.

Sub-division D gives us some remarkably picturesque strongholds of the Maori, such as Paritutu, Moturoa, Pohatu-roa and Taratara. There are other such places of imposing aspect of which illustrations are not available. Some of these cliff forts, such as Waimate, were defended by earthworks, etc., on the one accessible side; others, such as Paritutu, Pohatu-roa and Taratara were isolated cliff bound peaks or *mesa* that called for little in the way of artificial defences.

Regarding island forts and refuges it may be explained that in some cases islands were fortified, while in others they simply served as refuges from raiding enemies unprovided with canoes, and were not fortified, such as Tapu-te-ranga at Island Bay, Wellington. In troublous times islands were favoured places of residence, for many of the war expeditions of the Maori were made by land and thus island dwellers were safe from such raiders. Hence Mokoia, Motu-taiko, Whale Island, Tuhua, Kapiti, Mana, Somes, Ward, and a great many more isles were occupied for long centuries, though not continuously so in all cases.

An interesting feature in this division is the construction of artificial islands in lakes and lagoons, such as those of Horo-whenua and Muhunoa, of which more anon. Again islands or elevated ground surrounded by swamps were occasionally fortified and in one case we examined an artificial island that had been constructed in a swamp and enclosed by a stockade.

Methods of Fortification

In studying the fortified positions constructed by the old time Maori, regularity of design must not be expected. The Maori engineer was no disciple of Vauban, he followed no hard and fast system of fortification, he did not mark out his lines of defence from prepared plans. He knew nothing of bastion and gorge, of casemate and embrasure, these things lay in the womb of time, his descendants were to know them in the days that lay before. Nor did he ponder as to where to lay off his curtains and demilune, or how to work in orthodox terreplein and barbette. He simply selected a suitable site, then studied its contour lines and surroundings, until, with no help of pen or paper, he had grasped the solution of the problem, and worked out his plan. He then proceeded to mark the lines of scarp and

fosse, of rampart and stockade, after which he set his men to work and superintended their labours. At certain weak places he threw in an extra stockade or fosse, or erected an elevated platform to command it. The entrance passage he laid off by narrow and tortuous ways flanked by strong defences. According to the contour of the ground, and relative levels, he devised a defence of scarp and stockade, or of fosse and parapet. He cunningly carved a hill into terraces of unequal sizes and levels, each of which became a defensive area in itself. The easiest approach to that fort possessed the strongest defences, and for an enemy to reach the summit area meant most strenuous fighting to reduce the various fortified sub-divisions.

Maori methods of fortifying may be numbered as five, three of which are distinct types, one is a composite method, and one is quite modern, having come into use since the acquisition of firearms by the natives. The pre-European methods are the most interesting. The various types will be illustrated by plans and description, but the following brief explanation will acquaint readers with the methods:—

Pre-European:

1. Positions defended by stockades only.
2. Positions defended by fosse, rampart and stockade.
3. Terraced hill forts, the defences of which were composed of scarps and stockades only.
4. Positions defended by a combination of methods 1, 2 and 3.

Modern:

5. The modified gun fighters *pa,* showing the decay of certain old methods and introduction of the bastion or flanking angle, casemate, rifle-pit, etc.; ramparts reduced in size, and trenches much shallower.

Method No. 1 will be explained when we deal with stockades, and by illustrations taken from early works on New Zealand.

No. 2 is well illustrated in the case of the Manu-korihi *pa* at Waitara.

No. 3 includes the great northern forts of Pouerua, Mt. Eden, One Tree Hill, etc.

No. 4 is also illustrated by some good specimens, such as Urenui, Okoki, Te Koru, etc.

The descriptions and illustrations of the No. 5 class will tend to explain the various changes in native defences wrought by the introduction of firearms, as also the use of cannon by Europeans when attacking native forts.

Any position defended by stockades only was looked upon as an inferior place. In some cases they were for temporary use only, such as during the fishing or planting seasons, or the inmates could, in time of danger, retire to a strongly fortified position in the vicinity.

The No. 2 method is seen in forts on flat ground and sometimes in hill positions. No. 3 is usually employed on isolated hills, or peaks of ranges, while No. 4 includes most ridge and spur forts, and many of those on isolated hills and hillocks. Many of the hill forts showing no important terracings are covered with slight excavations, small flatted areas to contain one or two huts, such are Heipipi and Otatara, as also others in such districts as Wellington, where rock prevented extensive excavation. Such positions were often defended by stockades only. The remains of such places are most unimposing, while the heavily excavated terraced hills are the most striking of the *pa maori* as now seen.

Many of the fortified positions on level ground were naturally of much more regular form than those situated on hills, though the Moe-ariki *pa* at Urenui, situated on a level ridge summit is one of the most rectangular forts ever seen by the writer.

The neolithic engineers of Maoriland relied much on earthworks, such entered largely into the construction of their high-class forts, the *pa maioro.* The high scarps, deep wide fosses, and massive ramparts are striking features of many of the old fortified positions. A perusal of the descriptions of these places given herein will acquaint the reader with their present aspect, and also give him a fair idea of how they appeared in the days of Cook and Crozet, of Banks and Nicholas, and long before.

The majority of fortified places were sub-divided into sub-areas, though some small places were not. The lines of sub-division might be scarps, as in a terraced hill fort, palisading or earthen ramparts. In many cases each area was occupied by a particular sub-clan, or family group. In cases where the sub-divisions were divided by earthworks the lines are, of course, still traceable; markedly so in hill forts. Otenuku, a small flat land *pa* at Ruatoki, is divided into two parts by a deep fosse and heavy parapet as strong as the outer defences. A study of the plans of such fortified villages as Mt. Eden, Tapa-huarau, Taka-poruruku, etc., will show the reader how each gens of a clan might occupy its own area.

Proceeding from such a fort as Otenuku, with its somewhat precise lines and almost rectangular form, to a hill fort, we note a great difference in appearance. This difference manifests itself in two ways—first by destroying preciseness or regularity of form; second, the fortifying of different coigns of vantage provided the desired subdivisions and really converted the circumvallate area into a series of forts. Inasmuch as the lines of defence followed the natural contour of the hill, taking advantage of natural scarps, bluffs, points, etc., it follows that such hill forts were of all imaginable forms and everything but regular in outline. Thus a hill fort might possess defences consisting of three or four lines of fosse, parapet and stockade on one or more faces whereat the ground held but an easy slope, while another face might require but a single line, or, in the case of a vertical cliff, no artificial defences whatever. Repeated inquiries of old natives has convinced the writer that the Maori of yore was extremely careful in his selection of a site for a permanent fortified village, while examination of many old forts has served to uphold the belief. The narrator brings to mind many pleasant hours spent in exploring the remains of old *pa maori,* some of which have existed for many generations and are now covered with a dense forest growth. The tracing of fosse and vallum, of devious entrance passages and excavated terraces, holds the interest of the amateur archeologist. More especially is this the case when one is accompanied by some grey old tattooed warrior who knows of the fighting that has taken place at such forts, who talks of:—

"..... old unhappy far off things
And fights fought long ago"

who re-peoples the forest shrouded fort with fierce warriors, and relates how the attack was beaten off, or how the fort fell, and of the cannibal feast that followed.

Though the earthworks of many pre-European forts are yet well preserved, there is probably no one on which the carved posts of the stockade are yet standing. The last one seen by the writer was the Okarea *pa,* situated on the Wai-a-tiu tributary of the Whirinaki river, a remote spot surrounded by dense forest. Some of the tall carved posts of this Ngati-Manawa fort were still standing in 1898, while others had decayed. That place had been fortified, or renovated, early in the century.

The following remarks tend to prove that the Maori was not always at war, and that he did not reside permanently in fortified places:—

In his account of the Maori people, as observed by him in 1772, Crozet remarks: "The savages of New Zealand live in a continual state of warfare; their palisaded villages, surrounded by ditches and situated on very high cliffs, prove that they fear their enemies and are always on the defensive."

It is not the case that a Maori tribe lived in a continual state of warfare, though peace was an uncertain thing and the people had to hold themselves in readiness to meet trouble at any time.

Basil Thomson gives a curious account of the mode of life among the natives of the D'Entrecasteaux Isles, a people who live in small separate communities, each confined to its own territory, always hostile to each other, fear being mutual, hence there is but little fighting, though occasional murders of single individuals are committed. Here we see that

each clan was in fear of its neighbours, and, as there was no co-operation, that widespread fear was really their protection. Now, it is by no means improbable that a similar feeling often obtained among the Maori, and confined their hostilities to predatory raids and the cutting off of stragglers. When endeavouring to ascertain the history of the many old *pa* about Rua-toki, that had been occupied for generations, I found that at many of them no fights had ever occurred, or at least no serious ones, so far as was known.

Nor must it be supposed that the Maori village community lived permanently in the fortified village. When no attacks were feared from enemies the people often lived outside the fort, and even moved away from it to live for a while on the sea coast, or in the forest, when engaged in fishing or bird taking operations, etc., or at their cultivation grounds when planting, tending, or lifting crops. In many cases the community lived in a village protected merely by a fence or stockade, but had a strongly fortified *pa* in the vicinity to retreat to when danger threatened.

In speaking of Mokoia, near Auckland, as seen by him in 1820, Captain R. A. Cruise remarks:—"This village was about a mile long and half a mile broad, and the houses were larger and more ornamented with carving than those we had generally observed. Each family occupied an allotment, which in shape was oblong, and enclosed with a high strong paling. These allotments contained many houses, and the intermediate passages or streets were as clean as the season would permit. The adjacent country was flat, with the exception of a high round hill, which formed the *pa*....The ground was good and under cultivation, interspersed with detached houses and hamlets."

Note also the following remark by Nicholas, who visited the North in 1815:—"This village was situated, like most others, at the foot of a hill, and on the summit was built the *pa*, which, from its appearance was very strongly fortified."

Again, the same writer says:—"Upon an insulated rock not far from the village was built the *pa*, to which they never resorted but when attacked by their enemies, and, in such cases, from its strength and situation, they might safely retire to it as a place of security."

The following remarks on the old time *pa* are culled from Maning's *Old New Zealand*, an old work now, though no later production can equal it. They throw some light on the numbers of such places yet seen, and the great size of some of them:—"The natives are unanimous in affirming that they were much more numerous in former times than they are now, and I am convinced that such was the case, for the following reasons. The old hill forts are many of them so large that an amount of labour must have been expended in trenching, terracing, and fencing them, and all without iron tools, which increased the difficulty a hundred fold, which must have required a vastly greater population to accomplish than can be found now in the surrounding districts. These forts were also of such an extent that, taking into consideration the system of attack and defence used necessarily in those times, they would have been utterly untenable unless held by at least ten times the number of men the whole surrounding districts, for two or three days journey, can produce; and yet, when we remember that in those times of constant war, being the two centuries preceding the arrival of the Europeans, the natives always, as a rule, slept in these hill forts with closed gates, bridges over trenches removed, and ladders of terraces drawn up, we must come to the conclusion that the inhabitants of the fort, though so numerous, were merely the population of the country in the close vicinity. Now from the top of one of these pointed, trenched, and terraced hills, I have counted twenty others, all of equally large dimensions, and all within a distance, in every direction of fifteen to twenty miles; and native tradition affirms that each of these hills was the stronghold of a separate clan, bearing its distinctive name. There is also the most unmistakeable evidence that vast tracts of country, which have lain wild time out of mind, were once fully cultivated. The ditches for draining the land

are still traceable, and large pits are to be seen in hundreds, on the tops of the dry hills, all over the northern part of the North Island, in which the *kumara* were once stored..... These pits, being dug generally in the stiff clay on the hill tops, have, in most cases, retained their shape perfectly, and many seem as fresh and new as if they had been dug but a few years. They are oblong in shape, with the sides regularly sloped. Many collections of these provision stores have outlived Maori tradition, and the natives can only conjecture who they belonged to. Out of the centre of one of them which I have seen, there is now growing a *kauri* tree, one hundred and twenty feet high, and out of another a large *totara*. The outline of these pits is as perfect as the day they were dug.....

"Another evidence of a very large number of people having once inhabited these hill forts is the number of houses they contained.....Now in two of the largest hill forts I have examined.....the houses had been arranged in streets, or double rows, with a path between them, except in places where there had been only room on a terrace for a single row. The distance between the fire places proved that the houses in the rows must have been as close together as it was possible to build them, and every spot, from the fort to the hill top, not required and specially planned for defensive purposes, had been built on in this regular manner. Even the small flat top, sixty yards long by forty wide, the citadel, had been as full of houses as it could hold, leaving a small space all round the precipitous bank for the defenders to stand on.....

"We may easily imagine that a hill of this kind, covered from bottom to top with houses thatched and built of reeds, rushes and *raupo,* would be a mere mass of combustible matter, and such indeed was the case. When an enemy attacked one of these places, a common practice was to shower red hot stones from slings into the place, which, sinking into the dry thatch of the houses, would cause a general conflagration. Should this once occur the place was sure to be taken, and this mode of attack was much feared; all hands not engaged at the outer defences, and all women and non-combatants, were employed in guarding against this danger, and pouring water out of calabashes on every smoke that appeared. The natives also practised both mining and escalade in attacking a hill fort."

It must not, however, be imagined, that all the fortified places, the remains of which we now see, were occupied at one and the same time, in which connection the following remarks by Shortland are of interest:—

"In former times, when one tribe was at war with its neighbour, those families who were more nearly connected with each other, associated together for mutual protection, and built a *pa,* or fortification. These, being intended merely as places of defence, were readily abandoned, when the exhausted state of their cultivation grounds, or other circumstances, rendered another locality more convenient. Often what would appear to us trivial reasons, were to them sufficient for a removal.....Besides such voluntary removals, when a *pa* was taken by an enemy, as frequently happened, it was very seldom reoccupied.....the soil, stained by the blood of their relations, was *tapu.*"

"Their villages contain only five or six huts, but their towns, which I shall call their strongholds and citadels, are composed of a larger number. They have their towns on the steepest point of access that they can find. The huts are arranged in terraces, and it is there they take refuge against the aggressions of their enemies and their attacks. On these occasions all the huts scattered in the country are abandoned, and everybody falls back on the citadel."

The above remarks are from L'Horne's Journal of Surville's Voyage, published in McNab's *Historical Records of New Zealand,* vol. 2. Further remarks on Maori forts are so misleading as not to be worth quoting.

Much interesting matter might have been put on record by missionaries and early settlers concerning the old native *pa,* but no one took the trouble to do so, indeed it is probable that they took no interest in such things. Even in the 'forties' of last century there were

some very interesting survivals and remains to be seen, as witness the following passage from Angas:—"About four miles from Otawhao are the ruins of Rarowera, formerly one of the finest *pa* in this part of New Zealand. Much good carving, and many elaborately ornamented houses, still remain. These, however, are gradually rotting away and falling to the ground."

There is great diversity in the size and form of old earthwork fortified places. The latter peculiarity may be explained by noting that such form depended upon the formation of the ground, and the first was often due to the same cause. A certain hill or headland, or *mesa,* lent itself to the art of the *pa* builder, and in many cases the area within easily defended lines was but small. Some are of great size, the lines of defence enclosing many acres, as will be seen by a perusal of the following notes:—

The late Mr. S. Locke stated that the old Otatara *pa* (Redcliffe, near Taradale), extended over an estimated area of at least eighty acres.

Of a *pa* seen by him in 1839 Wakefield writes:—"This was the largest *pa* we had yet seen. The outer stockades were at least a mile in circumference; and the various passages between the different courts and divisions formed a perfect labyrinth."

When the Rev. Mr. Williams visited Waiapu in 1834, the *pa* at Rangitukia contained 560 fighting men, and that of Whakawhitira held 2,000.

Mr. Colenso wrote as follows of the Whakawhitira *pa*:—"From Rangitukia we went further up the Waiapu Valley to Whakawhitira, a very large *pa,* the largest by far that I had ever seen. Its fence [stockades] was also threefold, the massy and combined outer one being twenty-five to thirty feet high; its main posts consisting of entire and straight trees denuded of their bark, with large carved full length human figures painted red on their tops; of these figures there were above a hundred. During our stay there we measured, by stepping, one of the sides of this *pa,* and found it to be more than a mile in length, and the huge carved figures we ascertained to be more than six feet high, with their heads fully and deeply tattooed; this we proved from one that had been broken off and fallen, and placed upright below its big post. I took a sketch of this *pa,* which I still have."

In speaking of the occupation of the South Island by the Waitaha tribe, whose progenitors came to this land from Polynesia and settled at Waiau, Canon Stack says, "The size of the *pa,* and of the kitchen middens along the coast attributed to them, afforded conclusive evidence as to their numbers. At Mairangi and Kapuka-riki (Cust) the remains of a walled *pa* extending for about three miles along the downs, existed till the settlement of Europeans in that locality. Many Maoris still living.....assert that, twenty years ago, the broad outer ditch of the *pa* could be seen, and that from the bottom of it to the top of the bank was about seven feet, and that, at regular intervals along the wall, there were openings showing where the gates had been. They recollected old men saying that these gates were known to have had names which were now forgotten."

Of the old *pa* on the Auckland Isthmus, Mr. S. Percy Smith says:—"In point of size the fortifications around this city exceed any others I know in this country." One writer remarks that the Maunga-kiekie *pa* on One Tree Hill covered 100 acres.

In the Sydney Herald of Thursday, August 14, 1834, appeared an account of a voyage to New Zealand written by R.W.S., in which he describes a *pa* seen on the banks of the Waipaoa River at Poverty Bay:—"About four or five miles up the southernmost river, the pà's are situated, one of which is deservedly worth notice. It is above a mile in length, and formed of immense spars, erected at about one and a half by two feet apart, the intermediate space being filled by pallisadoes of *manuka* (a remarkably tough wood) of equal length, which, when viewed from a distance, has the appearance of a high brick wall; behind this outer work is an inner fence similarly constructed, but of less height, which forms a passage or communication from one part to another. The whole is flanked by a ditch having a high embankment of clay thrown up behind it, to prevent the balls from entering the houses,

etc. At the distance of every three hundred yards there are regular Sally Ports, in the form of square towers projecting from the regular line of fence, these have all strong doors and are ball proof. The river, along which one side of the *pa* extends, is fresh here, and there is sufficient space within the walls to grow food for a long siege. The only fault to be found with this fortification is its size, which from the amazing extent of ground it covers, would require from two to three thousand men to protect it. There is a smaller *pa* on the opposite bank."

In *The Maori History of the Taranaki Coast*, by S. Percy Smith, we read that the *pa* known as Te Putake, situated between the Tangahoe and Manga-rata streams, four and a half miles northeast by east from Hawera, was a celebrated place, and was over half a mile long.

In speaking of a *pa* seen by him at Waikanae in 1839, Dieffenbach says:—"The principal and most fortified *pa* was very large; it stood on a sand hill and was well fenced in, and the houses were neatly constructed. Everything was kept clean and in good order, and in this respect it surpassed many villages in Europe. The population seemed to be numerous, and I estimated it, together with that of the first mentioned village, and a third, about a mile higher up, to amount, on the whole to 700 souls."

Dieffenbach also visited one of the other stockaded villages mentioned, whereat a gun fight had occurred two days before. "Many traces of the strife were visible; trenches were dug in the sand of the beach, the fences of the villages had been thrown down, and the houses were devastated."

The following items treat of the sites of old native forts. Jameson writes:—"At three different points of Waihou, I observed the remains of old native fortresses. The number of these strongholds, even in parts of the country which are now uninhabited, denote that in former times the New Zealanders were much more numerous and warlike than at the present day. In the choice of their positions for defence, these people displayed as much sagacity as our semi-barbarian ancestors. Bold promontories, projecting into the water, and connected with the mainland by narrow necks, were the localities usually selected..... across the necks of their fortified peninsulas they dug ditches of great depth which are now choked up with rubbish and tangled brushwood."

In speaking of the *pa maori*, Polack, an early sojourner in the north, remarks that such places are usually situated by the side of rivers, creeks, and on islands, or on the top of hills. "These scarped hill tops may be seen in every district throughout the country. The *pa* is formed of two fences of similar make. These defences are formed of large posts sometimes thirty feet in length, thrust five feet in the ground, at a distance of fourteen feet apart, the spaces between them being filled up with lesser poles and stakes, with three long rails placed horizontally at separate distances and bound with a liane called *torotoro*, which is very tough and serviceable. These palisades are proof against a superior native force if the defenders possess any stamina within themselves.....These *pa* are seldom taken by assault.....The entrances in time of war are by stepping stones or blocks of wood, through a small opening, that can scarce admit a large made man; between the two fences a fosse about four feet deep is cut, which shelters the besieged while discharging their firearms at the invaders."

In describing the Katikati-aka *pa*, near the White Cliffs, North Taranaki, Mr. S. P. Smith writes:—"Here was situated Katikati-aka *pa*, at three and a half miles from Pukearuhe, and which was an important fortress in former days. It was built on a crag which jutted out into the sea, and on three sides was protected by perpendicular cliffs about two hundred feet high, and on the fourth, or inland side, by a steep ravine; the narrow neck between the edge of the cliff and slope of the ravine being only from thirty to forty feet wide. This was cut off by a deep double artificial ditch twenty-five to thirty feet deep, and served to make this *pa* one of considerable strength."

Of Te Arawi *pa*, at Kawhia, Mr. Smith writes:—"It is situated on a point projecting into the sea, and is connected to the mainland by a narrow razorback neck, and has cliffs all around it. On the north eastern side was an entrance to the *pa* by means of a rope and steps cut in the rock, but it is so steep my informant thinks no one with boots on could make the ascent. The cliffs are all rock, in which pits have been cut out (to serve as storage places), but there is no water on the point."

Marsden, who visited the Okuratope *pa* at Waimate, says that it contained about 200 houses [most of these might be described as huts], and was situated on the top of an almost inaccessible hill, surrounded by three deep trenches and three rows of palisades.

The following description of Te Kawau *pa*, four and a half miles south of Mokau, is by Mr. W. H. Skinner:—"Te Kawau *pa* was, in former times, the key to the whole of the West Coast, the buttress which, for generations, stemmed the tide of invasion from the north. The main *pa* was situated on an isolated rock partly surrounded at high water: the extent of the top was about seventy-five yards by forty yards, and the only approach was from the landward side, by using ladders which were drawn up after the inhabitants had retired within the *pa*. On all other sides the cliffs rose sheer to a height of from eighty to one hundred feet. The other part of the *pa* was separated from this citadel by a deep rift or chasm twenty yards wide and thirty-five yards deep. The landward portion of Te Kawau is one of those ready made strongholds which the ingenuity of man has converted into an impregnable retreat. The narrow neck, about twelve or fifteen feet wide, which connects this part of the *pa* with the mainland, is almost completely severed by a deep trench, and along the neck was the only approach to the *pa*, and on all other sides the cliffs rose perpendicularly from the sea, and from the Kiratahi stream, and sea level, forming an impassable rampart."

As an illustration of the way in which local conditions affected the form and style of fortifications, we may cite the case of the district north of Opunake, as about Cape Egmont. Here we have particularly level land with here and there small isolated hills or buttes, and these hillocks have been utilised by the *pa* builders of yore.

Regarding these hillock *pa* of the lowlands west of Mount Egmont, Mr. Percy Smith writes as follows in *The History of the Taranaki Coast*:—"There are a large number of fortified *pa*, some of great strength, and many with an interesting history. Many of these are built on isolated hills that rise above the general level, and which are due directly to volcanic action, though not craters in the ordinary acceptation of the term. The lava streams from Mount Egmont appear, at any rate in the neighbourhood of Cape Egmont to have extended right down to the sea in former times, and, as the outside cooled, the surface cracked and allowed of the molten lava of the interior forcing its way upward, thus forming the many isolated hillocks to be found in that part. The lava streams themselves have since been covered with ash ejected from the mountain, and hence but rarely show. Most of these hillocks are found to be solid stone within."

Taranaki was one of the great fort building districts of pre-European days, others being the Bay of Plenty, Hauraki, and the northern peninsula. In Mr. S. P. Smith's *History of the Taranaki Coast* over one hundred fort names are given as pertaining to Taranaki; the full number we shall never know.

Angas, writing in the 'forties' of last century makes the following remarks:—"The New Zealander has a fixed and settled habitation: he resides either in his *pa*, which is a fortified stockade; or in a *kainga maori*, or native settlement, which is not enclosed, where the houses are scattered about as in a village. In times of warfare, the whole tribe seeks a refuge within the *pa*, which is often erected on the summit of a steep hill, or on an island, or along the bank of a river. The *pa* is surrounded by a strong high fence, or stockade; and the interior is divided by lower fencings into numerous court yards, which communicate with each other by means of stiles; in each court stands the house and the cookhouse of one or more families, and also the *pataka*, or storehouse for food.....Within the

enclosure of the *pa* also stands the *wahi tapu,* or burial place of the chiefs, which being coloured red and ornamented with rich carving and a profusion of feathers, are attractive objects to a stranger.....Some of the *pa* are very extensive and contain a population of 1000 to 2000 people; others are much smaller, and are inhabited merely by one chief, with his family and dependants. Since the introduction of Christianity amongst the New Zealanders, the use of these fortifications has become less constant, and in whole districts the natives may be seen dwelling at peace in their scattered houses, without either wall or fence to protect them from an enemy."

Cruise, who visited New Zealand in 1820, and who saw many of the old type of *pa,* wrote as follows:—"The *pa* are situated on high, steep and generally conical hills ascended by a narrow winding pathway, so rugged that the European climbs it with personal danger; while the New Zealander, from custom and being barefooted, seems to experience neither inconvenience nor difficulty. As near the top of the *pa* as possible is the public storehouse; the huts of the people are scattered on the declivity; and to augment the natural strength of the place, it is fortified by one or more ditches and lines of palisades firmly fixed in the ground.....though in times of peace the people generally prefer scattering themselves over the low grounds and close to the sea side, at the moment of alarm they retire to the *pa,* as the place of safety and concentration."

Earle, who visited New Zealand in the 'twenties' of last century, writes:—"Opposite a small island, or rather sandbank, the vessel grounded.....It was a curious and interesting spot, being a native *pa* and depot, and was entirely covered with store houses for provisions and ammunition. The centre was so contrived that all assailants might be cut off before they could effect a landing, and we were all much gratified by the judgment and forethought displayed in this little military work."

It must be thoroughly understood that, in olden times, the Maori always preferred a hill site for his forts, in preference to flat land. An elevated situation was desired because such places were more defensible than a position on level ground, more easily defended with the old *rakau maori* or native weapons.

When such a situation as the above was not available, then a *koinga wai,* or river bend, was often selected as a *pa* site, some place where a stream, or river, by making a more or less sharp bend, made it possible to construct a *pa* by erecting defences, such as earthworks, stockades, and ditches, across the neck of the point. Such a site was all the more desirable in cases where the banks of the stream or river were high, or both high and precipitous. In some such cases active defence of the *pa* was practically confined to one face thereof, a marked advantage to the inmates. When such a place was attacked, but few persons were left to watch the other faces, so well protected, or, in some cases, inaccessible, were they.

The leading man of a clan, or gens, would decide on the site for a new *pa,* and there was usually one or more persons who possessed some skill in the selection of such a site, and in planning its defences. Such adepts would carefully examine the site and, by means of rods stuck in the ground, mark out the positions, form, and extent of the various earthworks, escarpments, ditches, stockades, entrances, fighting stages, etc. Not until such planning and marking off was completed did the labour of construction commence. A hamlet defended by earthen walls as well as stockades was termed a *pa maioro,* one defended by timber stockades only was called a *pa tuwatawata.* The form of a *pa* depended upon the formation of the ground, and about the only place on which a symmetrical square shaped *pa* could be seen was a level piece of land on a river bank, such as Te Kupenga, an old *pa* at Te Teko, and Te Takatakanga at Galatea. But in all cases wherein the site was on a hill, advantage was taken of the formation in laying off the defences, hence such fortified positions are of all imaginable shapes.

Some of the old *pa maori* were very strong natural positions, practically impregnable in neolithic times. Such was the Hamama *pa,* on the Wai-tahaia (East Coast district), where the stream doubles round and forms a pear shaped promontory with high unscalable cliffs. A lower cliff crosses the narrow neck at the stem end of the pear, and here the entrance to the *pa* was by a ladder that was drawn up at night by the occupants. The area was sufficient to allow of food cultivation within the defences, and it is said that this place has never been taken. These were the strongholds to which the people retired when threatened by enemies. Those living in the vicinity, either in open hamlets, single huts, or positions of inferior strength would, upon an alarm being given by messenger, smoke signals or trumpets, at once retire to the stronghold, taking with them their chattels and food supplies.

A perusal of the accounts given by early voyagers and travellers will show that the defences of forts in former times differed to some extent as to order, position, etc., and that such defences almost invariably conformed to the contour of the ground.

Part II.

DESCRIPTION OF THE PA MAORI OR FORTIFIED VILLAGE.

CONTENTS.

Cook's evidence the earliest. First *pa* seen by Cook. *Pa* at Mercury Bay seen by Cook. Scarp of 22 feet. Interior of *pa*. Islet refuges. Sir Joseph Banks' description of forts. Anderson's remarks. *Pa* at Queen Charlotte Sound. Dr. Thomson's remarks. Maori had nothing to learn from Royal Engineers. The Pehikātia *pa*. Earthwork defences. Ramparts, fosses and scarps. Defenders stood on ramparts in pre-gun days. The *pa maioro*. Tools used in constructing earthworks. How ramparts were constructed. Terraced hills. Stockades. The *aparua* defence. Methods of lashing Okuratope *pa*. Arrangement of stockades. How constructed. Huge posts. How they were handled. Oblique stockades. Elevated outer screens. The singular *wita* defence. The Miramar *pa*. The Motu-o-Puhi *pa*. Children formed models of *pa*. Fighting stages. Elevated platforms to protect entrance. Watchmen stationed on stages. Watch songs. The *pourewa* platform. Heads of enemies exposed. Fighting stages of Tonga, Marquesas, Fiji, and New Guinea. Gateways. Entrance passages. Sub-divisions of residential area. Crozet's account. Latrines. Middens. Outworks. Water supply.

IN the following pages are given some extracts from the works of early voyagers, as illustrating the general appearance and defences of the fortified places of the Maori prior to the advent of whalers and traders, who, by introducing firearms, wrought a change in native methods of attack and defence. The various defences of the *pa* will then be described, earthworks, stockades and platforms, as also the interior aspect of such places, and methods of attack and defence. In addition are given some interesting notes on certain ceremonial performances pertaining to the construction and opening of a new fort.

In Tasman's Journal we find no notes on Maori life, as that voyager did not land on these shores. Our earliest information on the subject is found in the account of Captain Cook's first voyage, when, in the year 1769, he visited the East Coast district, the Bay of Islands, Queen Charlotte Sound, etc.

Of the first *pa* seen in New Zealand (at Poverty Bay) Banks writes:—"On a small peninsula at the north east head we could plainly see a regular paling, pretty high, inclosing the top of a hill, for what purpose many conjectures were made; most are of opinion that it must be either a park of deer, or a field of oxen and sheep." This was evidently a stockaded village.

Cook makes the following remarks on a *pa* seen by him at Mercury Bay (November 11th, 1769) :—"A little within the entrance of the river, on the east side, is a high point or peninsula jutting out into the river, on which are the remains of one of their fortified towns. The situation is such that the best engineer in Europe could not have chose a better for a small number of men to defend themselves against a greater; it is strong by nature, and made more so by art. It is only accessible on the land side and there have been cut a ditch, and a bank raised on the inside. From the top of the bank to the bottom of the ditch was about twenty-two feet, and depth of the ditch on the land side fourteen feet; its breadth was in proportion to its depth, and the whole seemed to have been done with great judgment. There had been a row of pickets on the top of the bank, and another on the outside of the ditch; these last had been set deep in the ground and sloping with their upper ends hanging over the ditch. The whole had been burnt down, so that it is probable that this place had been taken and destroyed by an enemy."

Here we have a very brief note on a promontory fort, cut off from its land base by a fosse fourteen feet in depth, with a rampart or superimposed wall surmounting the inner scarp thereof. As the inner scarp was 22 feet then the rampart must have been 8 feet in height. In addition to this defence of an imposing 22 ft. scarp, a stockade stood on the top of the parapet, which would add at least 10 ft. to the height of the obstacle presented to an attacking force. Another stockade erected outside the fosse was not perpendicular, but leaned inwards over the trench.

On November 12th, 1769 Captain Cook visited a *pa* on the north side of Mercury Bay, of which he remarks:—"This village is built upon a high promontory on the north side, near the head of the bay. It is in some places quite inaccessible to man, and in others very difficult, except on that side which faced the narrow ridge of the hill on which it stands. Here it is defended by a double ditch, a bank and two rows of picketing, the inner row upon the bank; but not so near the crown but what there was good room for men to walk and handle their arms between the picketing and the inner ditch. [See Fig. **10**, p. 28.] The outer picketing was between the two ditches, and laid sloping with their upper ends hanging over the inner ditch. The depth of this ditch from the bottom to the crown of the bank was twenty-four feet. Close within the inner picketing was erected by strong posts a stage thirty feet high and forty feet in length, and six feet broad. The use of this stage was to stand upon to throw darts at the assailants, and a number of darts lay upon it for that purpose. At right angles to this stage and a few paces from it was another of the same construction and bigness, this stood likewise within the picketing, and was intended for the same use as the other, *viz.*, to stand upon to throw stones and darts upon the enemy as they advanced up the side of the hill where lay the main way into the place. It likewise might be intended to defend some little outworks and huts that lay at the skirts and on this side of the hill. These outworks were not intended as advanced posts, but for such of the inhabitants to live in as had not room in the main works, but had taken shelter under it.

"Besides the works on the land side, above described, the whole village was palisaded round with a line of pretty strong picketing run round the edge of the hill. The ground within having not been level at first, but laid sloping, they had divided it into little squares and levelled each of these. These squares lay in the form of an amphitheatre, and were each of them palisaded round, and had communication one with another by narrow lanes and little gateways, which could easily be stopped up, so that if an enemy had forced the outer picketing he had several others to encounter before the place could be easily reduced, supposing them to defend every one of the places one after another. The mainway leading into this fortification was up a very steep part of the hill and through a narrow passage about twelve feet long and under one of the stages. I saw no door or gate, but it might very soon have been barricaded up. Upon the whole I looked upon it to be a very strong and well chosen post, and where a small number of resolute men might defend themselves a long time against a vastly superior force, armed in the manner as these people are. These seemed to be prepared against a siege, having laid up in store an immense quantity of fern roots, and a good many dried fish, but we did not see that they had any fresh water nearer than a brook which runs close under the foot of a hill, from which I suppose they can at times get water, though besieged, and keep it in gourds until they use it.

"Under the foot of the point on which the village stands are two rocks, the one just broke off from the main, and the other detached a little from it. They are both very small, and more fit for birds to inhabit than men; yet there are houses and places of defence on each of them, and about a mile to the eastward of these is another of these small fortified rocks, which communicates with the main by a narrow pathway, where there is a small village of the natives. Many works of this kind we have seen upon small islands, and rocks, and ridges of hills on all parts of the coast, besides a great number of fortified towns, to all appearances vastly superior to this I have described. From this it should seem that the people must have long and frequent

wars, and must have been long accustomed to it, otherwise they never would have invented such strongholds as these, the erecting of which must cost them immense labour, 'considering the tools they have to work with, which are only made of wood and stone.''

We have here a better, more detailed account of a promontory fort in the same district. The sides of the headland being so steep, the principal defences were those that served to cut the defended area off from the mainland. These defences consisted of two fosses, a wall or parapet and two lines of stockade. The description is not by any means too clear, but the innermost defence seems to have been a wall or rampart on which stood a perpendicular stockade of considerable height. Along the inside of the upper part of this stockade the fighting stage was situated as shown in Fig. **10** below. Outside the rampart, at its base, was a fosse, the inner scarp of which, including the outer slope of the rampart, was 24 ft. in height. Along the outer brow of the fosse ran an outer stockade that leaned inward over the fosse, while outside this inclined defence was another fosse. We shall meet with this oblique stockade again, in some cases leaning outward. The stockade round the brow of the steep faces of the promontory, where earthworks were unnecessary, should be noted, as also the fighting stages. Other interesting features are the descriptions of the arrangement of the interior of the fort and the protection of the entrance by means of a fighting stage commanding a narrow passage between two lines of stockade.

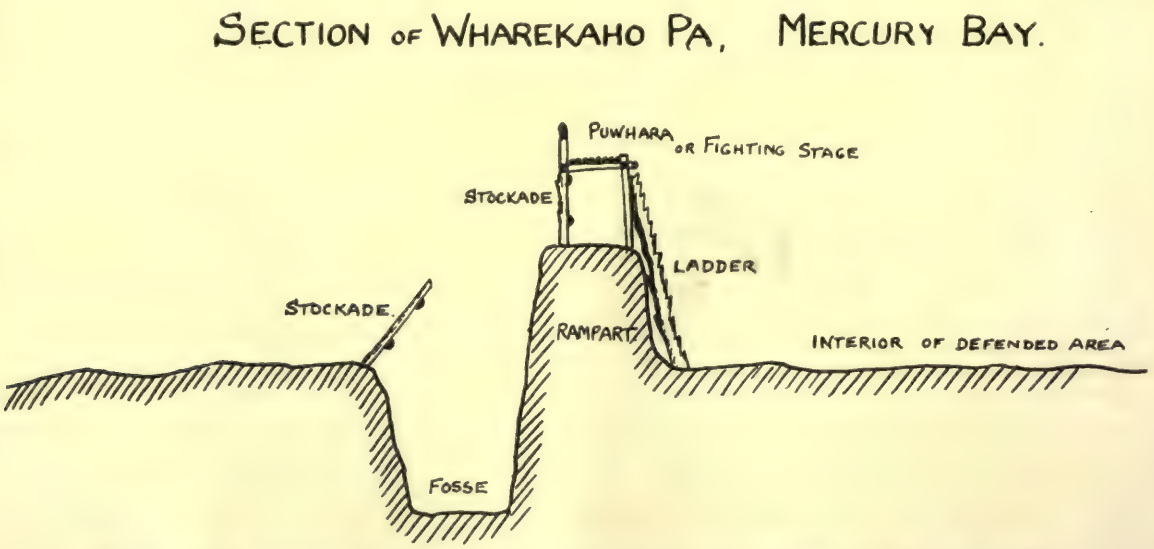


FIG. 10.—INNER DEFENCES OF WHAREKAHO PA AT MERCURY BAY, AS DESCRIBED BY COOK AND BANKS. Defenders stationed on the lofty stage were enabled to lunge downward outside the oblique stockade with their long spears, and so discourage assailants. See p. 27.

The above fort, as shown by Mr. Haszard, was that known as Whare-kaho (See *Transactions of the N.Z. Institute,* vol. 35, p. 30.) It is said to have been occupied by a clan known as Ngati-hei and Capt. G. Mair states that it was besieged by Ngati-Tama-te-ra in the time of Tuterangi-anini,, who cut off the water supply and eventually took the place with much slaughter. A few of its inmates escaped to Te Puta-o-Pare-tauhinu, a *pa* situated on a rocky islet in the form of an arch on the north side of Mercury Bay.

The following is Banks' description of the Whare-kaho *pa;* he places the height of the stage at 20 ft. which is more likely to be correct than Cook's 30 ft:—

''It was situated at the end of a hill where it jutted out into the sea, which washed its two sides: these were sufficiently steep, but not absolutely inaccessible.....The whole was enclosed by a palisade about ten feet high, made of strong poles bound together with withies: the weak side next the hill had also a ditch, twenty feet in depth, nearest the palisade. Besides this, beyond the palisade was built a fighting stage, which they called *porāvā* [*pourewa*]. It is

a flat stage covered with branches of trees upon which they stand to throw darts or stones at their assailants, they themselves being out of danger. Its dimensions were as follows: Its height above the ground 20½ ft., breadth six feet six inches, length 43 ft.; upon it were laid bundles of darts, and heaps of stones, ready in case of an attack.....The side next the road was also defended by a similar stage, but much longer; the other two were by their steepness thought to be sufficiently secure with the palisade. The inside was divided into, I believe, twenty larger and smaller divisions, some of which contained not more than one or two houses, others twelve or fourteen. Every one of these was enclosed by its own palisade, though not so high and strong as the general one; in these were vast heaps of dried fish and fern roots piled up, so much so that if they had had water, I should have thought them well prepared for a siege, but that had to be fetched from a brook below; so that they probably do not besiege a town as we do in Europe. Without the fence were many houses and large nets, the latter, I suppose, being brought in upon any alarm."

Banks also makes the following remarks:—"The state of war in which they live, constantly in danger of being surprised when least upon their guard, has taught them, not only to live together in towns, but to fortify those towns, which they do by a broad ditch, and a palisade within it of no despicable construction."

FIG. 11.—SITE OF AN OLD PROMONTORY PA AT MERCURY BAY, PROBABLY ONE OF THOSE DESCRIBED BY COOK AND BANKS.
[Drawing by Ethel Richardson.

An Auckland correspondent supplies a photograph of a promontory which he states was an old *pa*. It is situated a little south of Mercury Bay, below the Purangi river. He describes it as inaccessible. The photo shows a fine rock archway and an outer rock buttress. This promontory fort is shown in Fig. **11** above.

In Anderson's narrative of Cook's voyages some high stockades seen on the Mahia coast are referred to as follows:—"High palings upon the ridges of hills were also visible in two places, which were judged to be designed for religious purposes." Of other *pa* seen between Matata and Tauranga, he writes:—"The villages were upon the high land next the sea, more extensive than any we had seen, and surrounded by a ditch, and a bank with rails on the top of it. There were some inclosures that resembled forts, and the whole had the appearance of places calculated for defence."

Of the fortified places at Mercury Bay examined by Cook, Banks and Solander, Anderson writes:—"The smallest was romantically situated upon a rock, which was arched; this village did not consist of above five or six houses, fenced round. There was but one path, which was very narrow, that conducted to it." Of another and larger *pa* in the vicinity he writes:—"The town was named Wharretouwa. It is seated on a point of land over the sea, on the north side of the bay, and was pailed round, and defended by a double ditch. Within the ditch a stage is erected for defending the place in case of an attack; near this stage quantities of darts and stones are deposited that they may always be in readiness to repel the assailants. There is another stage to command the path that leads to the town; and there were some outworks. The place seemed calculated to hold out a considerable time against an enemy armed with no other weapons than those of the Indians."

Of the fortified places seen at Queen Charlotte Sound during Cook's first voyage, Anderson writes:—"Some of the company in their excursion met with fortifications that had not the advantage of an elevated situation, but were surrounded by two or three wide ditches, with a drawbridge, such as, though simple in its structure, was capable of answering every purpose against the arms of the natives. Within these ditches is a fence, made with stakes, fixed in the earth.....On the 24th we visited a hippah [*pa*]* which was situated on a very high rock, hollow underneath, forming a fine natural arch, one side of which joined to the land, and the other rose out of the sea.....The hippah was partly surrounded with palisadoes, and it had a fighting stage, like that already described." Another *pa* visited was seated on a rock almost inaccessible; it consisted of about one hundred houses and a fighting stage. The islet refuge is illustrated in Parkinson's work.

The following remarks are also from Anderson's work:—"The hippahs or villages of these people, of which there are several between the Bay of Plenty and Queen Charlotte's Sound, are all fortified. In these they constantly reside; but near Tolaga, Hawke's Bay, and Poverty Bay, only single houses are to be seen, at a considerable distance from each other."

Anderson makes a curious statement, as follows:—"On the sides of the hills were erected long stages, supplied with darts and stones, thought by us to be retreats in time of action; as it appeared that from such places they could combat with their enemies to great advantage." In this singular remark Anderson seems to have confused the fighting stages of fortified villages with *whata* or elevated food storage platforms, or possibly with the erection of poles of unknown use seen on a hill at Tolaga. Why should isolated stages be supplied with darts and stones?

In Becket's account of Cook's first voyage appear the following remarks on some fortified villages situated at Queen Charlotte Sound:—"In this part of New Zealand we saw many towns, whose inhabitants had either fled or been exterminated; some of them appear to have been deserted or uninhabited four or five years, being overgrown with shrubs and high grass. On a small island lying S.E. from the place where we anchored, was one of these deserted towns, most agreeably situated, and consisting of about eighteen houses, placed in a circular form; it was surrounded by a wall curiously constructed by driving two rows of long stakes or spars into the ground, at convenient distances, and afterwards filling the intermediate space with what we called broom stuff, being a small kind of brush, made into bundles like faggots, and placed on end in double rows, supported by others lying parallel with the ground. In this manner the wall is raised six or seven feet in height, and, notwithstanding the simplicity of its structure it is not easily broken or destroyed, especially when guarded by men who fight not only to preserve freedom and property, but their own bodies from being cruelly butchered and eaten.

"At a little distance from this town we saw the remains of a more regular fortification, situated on a high hill, near a pleasant bay. The hill itself was almost inaccessible, and on its top was a level flat, large enough for a town, which was surrounded by a fence made from spars

*Cook's rendering of the words '*he pa*,' meaning 'a fortified village.'

two feet in circumference, drove deep into the earth, and about twenty feet in height: these were placed in contact with each other, and without them was a ditch about ten feet in breadth: within the fence were several large reservoirs for water, and stages adjoining to the spars, for supporting those who were placed to guard the town, which appeared to have been spacious enough to contain two or three hundred houses, though none were then remaining. The sides of the hill were in every part so steep that nobody could ascend them except by crawling on his hands and knees.

"At the bottom of this hill we observed the ruins of a town which had belonged to the proprietors of this castle, and which was the place of their common residence; for, besides their town, the natives have always a separate fort or stronghold, which serves them for a place of retreat, and a magazine for securing their dried fish, fern root and other provisions; and, to prevent its being taken by surprise, they always leave a sufficient number of armed men therein, and thither they all retreat upon an alarm; always keeping in readiness a sufficient quantity of water in reservoirs, and regular piles of spears and stones dispersed along the stage adjoining to the fence; the height of these stages being fitted to afford those on guard sufficient shelter behind the fence, and so much elevation as not to be impeded by it in flinging their stones or using their spears, etc.

"Some of these castles, which have not the advantages of an elevated situation, to supply those defects are surrounded by two or three wide ditches, with a drawbridge, which, though simple in its structure, is capable of answering every purpose: and within these ditches is a fence made from spars fixed in the earth after the manner of that which was last described, but with this difference, that they incline inwardly, a circumstance which we thought favourable to the besiegers, but, on communicating this opinion to one of their chiefs, he assured us of the contrary, observing that if the spars should be pointed or inclined outwardly towards the enemy, that inclination would afford the assailants an opportunity of sheltering themselves under their points, from which it might be impossible to dislodge them, and that they would there be able to dig subterraneous passages into the castle. The same chief told us that these strongholds were never taken, unless by surprise, or when the enemy, being masters of the field, converted the siege into a blockade, and, depriving them of all external subsistence, occasioned a famine within; and when this happens, the besieged, having no hope of foreign aid, all their friends and countrymen being shut up in the same castle, are compelled either to perish with hunger, or sally out and meet the spears of their enemies."

The above narrative contains some statements of considerable interest. The advantages of the oblique, inward leaning stockade are not, however, well explained. They were employed in conjunction with elevated platforms occupied as fighting stages that were erected on the inner side of an interior and vertical stockade, and secured to that stockade by means of withie lashings. Defenders stood on this stage, protected about breast high by the upper part of the vertical stockade, and from that coign of vantage lunged downward with their long spears at assailants outside the oblique palisading. The latter was laid at such an angle that this could be done. See Fig. **30**, p. 70.

The combined palisading and rampart mentioned above was not a native usage in other parts, so far as we are aware; this is the only defence of the kind mentioned by early writers. Bundles of *manuka* scrub seem to have been packed into a space between two stockades, and no mention is made of earth as forming any part of the rampart, an improbable arrangement, inasmuch as the mass of dry brush would be highly inflammable, and so constitute a serious danger.

The mention of reservoirs for water situated within the defences is worthy of remark, and represents an occasional usage.

Of fortified positions seen near the East Cape, Banks writes:—"We saw plainly with our glasses villages larger than any we had before seen, situated on the tops of cliffs in places almost inaccessible, besides which they were guarded by a deep fosse and a high paling within it, so that probably these people are much given to war. In the evening many towns were in

sight, larger than those seen at noon, and always situated like them on the tops of cliffs and fenced in the same manner."

When off Portland Island during his first voyage Cook speaks of having seen 'in two places high rails upon the ridges of hills, like what we had seen upon the peninsula at the northeast head of Poverty Bay: as they were ranged in lines only, and not so as to enclose an area, we could not guess at their use, and therefore supposed they might be the work of superstition. This may possibly have been a *pa* in course of erection. Another puzzling item is noted by Cook as having been observed on a hill at Tolaga, north of Poverty Bay:—"Mr. Banks..... climbed a hill.....to see a fence of poles which we had observed from the ship and which had been much the subject of speculation.....The poles appeared to be about sixteen feet high; they were placed in two rows, with a space of about six feet between them, and the poles in each row were about ten feet distant from each other. The lane between them was covered by sticks, that were set up sloping towards each other from the top of the poles on each side, like the roof of a house. This rail work, with a ditch that was parallel to it, was carried about a hundred yards down the hill in a kind of curve; but for what purpose we could not guess."

When passing up the coast from Matata towards Tauranga, Cook saw more fortified villages:—"The villages which were much larger than any we had yet seen, were built upon eminences near the sea, and fortified on the land side by a bank and ditch, with a high paling within it, which was carried all round: besides a bank, ditch, and pallisadoes, some of them appeared to have outworks. Tupia [Tupaea] had a notion that the small inclosures of pallisadoes, and a ditch that we had seen before, were *morais* [*marae*] or places of worship; but we were of opinion that they were forts."

In his *Story of New Zealand,* Dr. Thomson remarks as follows on Maori forts:—"The construction of the war *pa* exhibits the inventive faculty better than any other of their works. Their shape and size depended much on the nature of the ground and the strength of the tribe. They had double rows of fences on all unprotected sides; the inner fence, twenty to thirty feet high, was formed of poles stuck in the ground, and lightly bound together with supplejack withies and *torotoro* creepers. The outer fence, from six to eight feet high, was constructed of lighter materials. Between the two there was a dry ditch. The only openings in the outer fence were small holes; in the inner fence there were sliding bars. Stuck in the fences were exaggerated wooden figures of men with gaping mouths and out-hanging tongues. At every corner were stages for sentinels, and in the centre scaffolds, twenty feet high, forty feet long, and six broad, from which men discharged darts at the enemy. Suspended by cords from an elevated stage hung a wooden gong twelve feet long, not unlike a canoe in shape, which, when struck with a wooden mallet, emitted a sound heard in still weather twenty miles off. Previously to a siege the women and children were sent away to places of safety."

It should be said here that in pre-European forts, the stockades were not composed of saplings, but of stalwart heart wood timbers very firmly embedded in the ground. The larger posts only of the main fence were so high, the secondary posts were shorter, and the intermediate palisades shorter still, say ten to twelve feet above ground. These were not lightly bound together, but strongly lashed, and never with supplejack, which is not a durable lashing material, and soon becomes brash. Thomson also omits to mention the rails to which the palisades were lashed. The carved figures were not simply stuck in the stockades; they were carved on the upper parts of massive posts of the stockade. Stages were not erected at every corner, and not necessarily in the centre, but were utilised to protect weak places wherever they might be. There was no orthodox length or height for such; they were all sizes; the measurements given are those of one examined by Cook and Banks at Mercury Bay. Gongs were of differing forms and sizes, and their use was not universal. Non-combatants were sometimes sent to some refuge in time of attack, but in many cases remained within the fort.

Captain H. Eyre-Kenny, in a paper contributed to the *New Zealand Military Journal*, July, 1912, says:—"The Maori was a born engineer. He constructed his palisaded *pa*, and designed his earthworks.....with infinite skill and ingenuity. The Royal Engineers could teach him nothing; on the contrary, they adopted Maori methods in several respects.....They were clever, too, in selecting the sites of their *pa*. They were generally situated on a narrow spur of a range of hills overlooking the sea, the rivers, or plains, the sides having a natural or artificial scarp.....The whole of the interior of the *pa* was intersected in every direction by low fences, each hut being fenced around, whilst latterly, to counteract the effect of Cameron's small but powerful siege train, loopholed bomb-proof casemates were provided. Thus, even when troops had effected an entrance, they would be entangled and confused, and unable to use the bayonet effectively. This was the real cause of the disaster at the Gate Pa in 1864..... The natives occasionally added an outwork, like a lunette, commanded by the *pa*, if the locality was suitable."

In a paper on certain *pa* of Canterbury, Colonel Slater gives some notes of interest in the *New Zealand Military Journal* for July, 1912. Of an island *pa* in Lyttelton Harbour constructed on an islet called Ripapa or Ripa, he says:—"The *pa* was surrounded by an earthwork with palisades on the outer side, the bastions were evidently an attempt to gain flank defence .....the inner earth work would have served as a rallying post and second defence....."

Bastions sounds like a modern *pa*, such as were constructed after guns were introduced. A plan and section of the island *pa* are given, showing the remains of the palisades in the middle of the earthwork. The *pa* was divided into two parts by an inner earthwork.

In examining old native forts it is clear that, in many cases, an outer area was not strongly defended, though used as a residential area. In the event of a serious attack these folk would vacate such a place and retire within the stronger defences.

A certain *pa* in the Whanga-nui district was of an oblong form, and was divided into two divisions. One of these was the stronghold, well defended with earthworks and stockades, while the other half was surrounded simply by a stockade or palisading, and this latter area was used as a site for cooking sheds, etc., not as a site for permanent dwelling houses. On the approach of enemies the latter part of the *pa* was abandoned, the people retiring within the strongly defended area.

The somewhat famous *pa* known as Pehikātia was situated on the bank of the Tauweru stream, Wai-rarapa district. The precise name of the fort is said to have been Te Ngutukoko, while Pehikatia is the name of the place where it was situated. This place is said to have had three lines of defence, the outermost of which was an upright stockade, the *pekerangi*. Inside this, and close to it was a fosse, on the inner side of which was a heavy rampart and another stockade. Within this again was yet another stockade, this being the innermost defence. This *pa* was provided with a considerable number of elevated platforms, attached to the stockades, and from which defenders could lunge down with spears at any enemies outside the *pekerangi*. The entrance to this fort was similar to that of the Wharekaho fort described above; to enter the place one passed through the *waha ngutu* or narrow entrance into the *waharoa*, a long narrow interior passage. Just before emerging into the interior of the inner line of defences, one had to pass underneath an elevated platform or fighting stage. For an enemy to pass along the passages would mean constant exposure to flank and overhead attack.

Earthworks of the Pa Maori.

The earthwork defences of native forts may be brought under three headings, *viz.*:—

1. Ramparts or parapets.
2. Fosses or trenches.
3. Escarpments or scarped faces.

Casemates and bastions were not a feature of the old forts of pre-European days, but were introduced after the acquisition of firearms. Ramparts and fosses are almost inseparable in the

remains of old time *pa*, but we also see the fosse without any accompanying rampart or parapet, as noted in ridge forts. The common method was to excavate a fosse and to utilise the spoil in building up a massive wall on the inner brow of the fosse, so that the outer scarp of the wall or rampart coalesced with the inner slope of the fosse, thus producing an even, unbroken face difficult for escaladers. In Cook's account, given above, we have a trench 14 ft. deep, but a scarp face of 22 ft., showing that the superimposed rampart, or bank as he terms it, was about eight feet in height. A rampart without an accompanying fosse did not appeal to the Maori; he liked to have a deep trench outside it to increase the strength of the defence. Occasionally we see an earthen wall of inferior size on the brow of a scarped face, acting as a parapet, as noted in certain terraced forts. See Fig. **12** below. Still rarer are the cases in which we see a trench at the base of the inner scarp of a terrace formation. Such trenches may have been made after firearms were acquired. A steep hill slope might be defended by means of a scarped face 8 ft. to 20 ft. in height, with a stockade along the brow thereof, or there

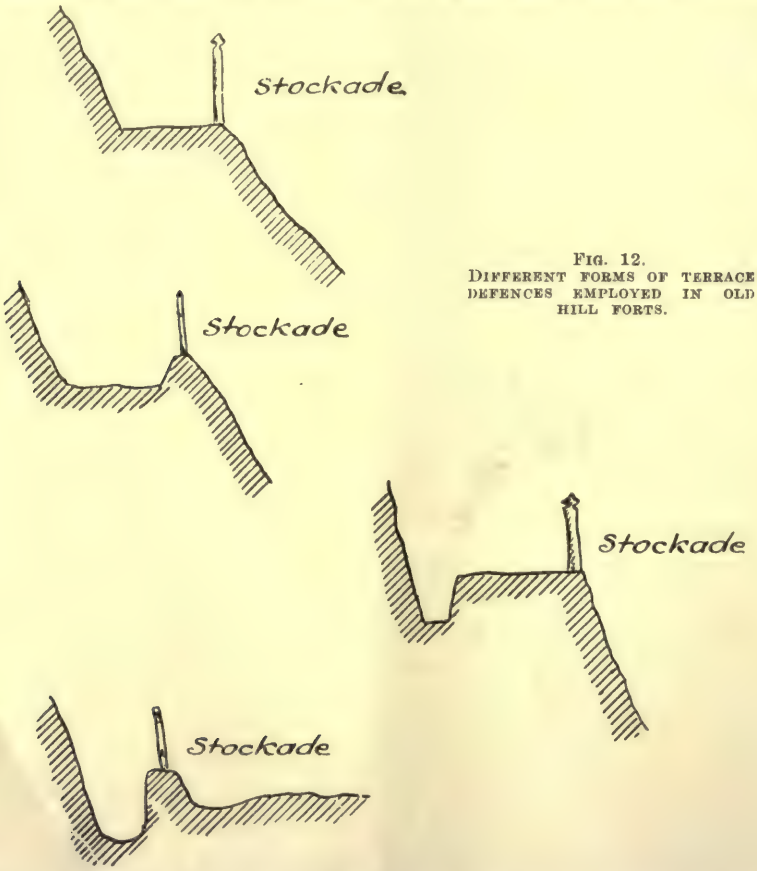


FIG. 12.
DIFFERENT FORMS OF TERRACE DEFENCES EMPLOYED IN OLD HILL FORTS.

might be in addition a fosse at the base of the scarp with a rampart outside it, on which another stockade would be erected. Again, one or more terraces might be excavated below the scarp, each of which would have a stockade along its outer edge. All these methods, as also other defensive works, will come within the scope of this paper, when we come to deal with the exploration of the old fortified places of the Maori.

It is doubtful if a banquette was ever employed by the Maori in pre-European days, simply because the Maori did not conceal himself behind his earthworks, he stationed himself on the top of them in order to repel an attack. No remains of such banquettes are seen at any old fort we have examined, nor do any of the early travellers mention such a feature. It was the gun that drove the Maori from the summit of his ramparts and forced him to seek shelter behind them.

FIG. 13.—FOSSE OF THE KUMARA-KAI-AMU PA AT URENUI, TARANAKI.

Erosion and the trampling of stock have destroyed the symmetrical aspect of these defence works, and the fosse contains much debris. The scarp on the left is surmounted by a rampart. For a description of this old fort see p. 240.

FIG. 14.—FOSSE OF AN OLD PA SHOWING EFFECTS OF DETRITION.
See p. 37.
[*Augustus Hamilton. Photos.*

FIG. 14A.—FOSSE OF A TARANAKI PA.

See p. 37.

[*Augustus Hamilton, Photo.*

The outermost defence was usually a fosse and stockade in forts constructed on level land, and also in many cases in the hill forts. Some of the fosses yet seen are of considerable size, being up to 20 ft. in depth and 12 ft. wide across the bottom, and then brow erosion and deposits of debris in the fosse have to be taken into consideration. See Figs. **14-14A**, pp. 35-36. In the case of ramparts it may be said that none preserve their original aspect; having been so long abandoned to the elements, and the trampling of stock, their summits have become rounded and the batters degraded. The illustrations given will enable the reader to understand the aspect of ramparts, fosses and stockades.

In some old forts three, four, and even as many as five ramparts are seen, but many *pa maioro* or rampart forts have but two, some only one. In some cases the various ramparts and fosses were close together; in others they are some distance apart, with a residential area between them. A line of defence such as the single rampart and fosse may be a very strong one against an enemy not possessing firearms, and these defences would certainly be supplemented by a stockade. The Puketapu *pa*, near Te Teko is a good specimen of a small isolated hill fortified by several lines of fosses and ramparts on its slopes.

In some districts it is noted that fortified positions in or near a forest are by no means so strongly defended as those in open country, the occupants of the former having the adjacent forest to depend upon as a refuge. In the Urewera district, a congeries of rugged forest clad ranges occupied by the Tuhoe tribe, but very few remains of fortified places are seen; these fierce bushmen relied principally on their rough inhospitable forest clad hills and gulches, and

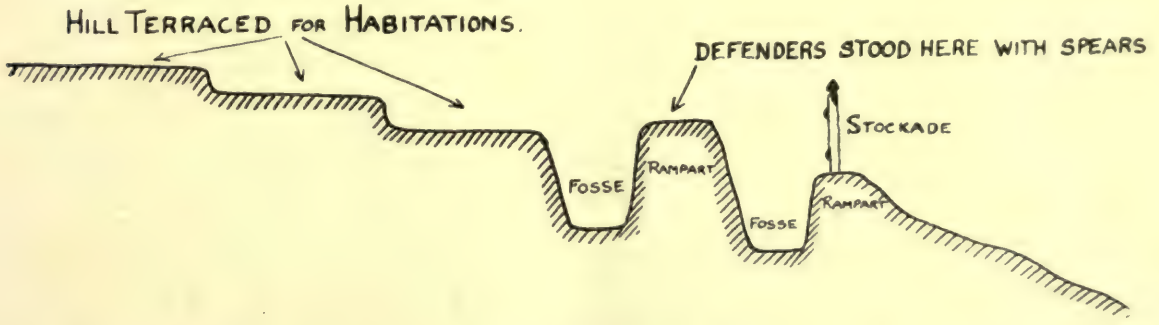


FIG. 15.—DIAGRAM SHOWING THE FOSSE, RAMPART AND STOCKADE DEFENSIVE SYSTEM.
See also Fig. 10 showing defences of the Wharekaho Pa.
See p. 38. [*Drawing by H. Hamilton.*

the cover they afforded. They were past masters in the arts of ambuscade and bush warfare. In open country, such as the Taranaki coast, the Bay of Plenty, and some other districts, old forts are very numerous. These folk had no forests at hand to retire to. It might so happen that a clan possessed no really good site for a strong fort on its own lands, whereupon the chief of a neighbouring clan might offer them such a site. Such an offer was in many cases declined, simply because no Maori chief likes to live under the *mana* (influence, authority, etc.) of another. It might be said in after years that he and his folk had sought protection under another chieftain, which would be truly a grievous slight. No person more careful of his dignity than your Maori chief.

An old native of the East Coast informed the writer that occasionally a fort on flat land was so constructed as to have several ramparts of two different heights, alternate high and low walls, the latter being known as *maioro maru*, and the former as *maioro pekerangi*. Also that in such a fort there was no stockade outside the outermost rampart, and that a stockade not raised on a rampart was erected inside the second wall.

The term *maioro* is applied not only to an earthen rampart or wall, but, curiously enough, also to a fosse or trench, reminding us of our word moat, with its double meaning.

Some elderly natives assert that, in former times, the ramparts of forts were from 6 ft. to 12 ft. in height, but when situated on the edge of a fosse the scarp face would, of course, be increased by the depth of the fosse, as noted by Cook. Such ramparts are still seen 9 ft. in height in cases where the elements and the trampling of stock have been working destruction for many years. The second and third decades of the 19th century saw the abandonment, to a marked extent, of the old type of native fort, in order to meet changed conditions of warfare.

The top of a rampart of the pre-European forts was, we are told, about six or seven feet in width, thus affording room for the defenders to stand on it and use their spears. See Figs. **15** and **16**, pp. 37-39. This width would allow of a stockade being erected about two feet from the outer edge of the wall, and still leave room for men to stand on the inner side and manipulate spears. Or those ramparts surmounted by a stockade might have been a foot wider. In all remaining walls the upper parts are, of course, much rounded by abrasion and erosion. Other such ramparts were not surmounted by stockades.

The generic term for a trench or ditch is *awakari*, but Williams' gives two specific terms:— *Awamate*, a fosse outside a line of defence, and *whakaawarua*, a fosse inside such a line. In excavating these trenches the most primitive forms of wooden implements were used:—

1. The *wauwau;* a pointed stick used as a pick to loosen soil.
2. The *ko;* an implement resembling the old Highland spade, and furnished with a detachable footrest. The *kaurori take*, or *kaurori pa* was a short form of *ko* with a strong blade, also used with a *teka* or footrest as a digging implement to loosen soil.
3. The *rapa maire;* a wooden spade, used principally as a shovel, but also as a spade, as in loose friable soils. The *puka* was a long bladed wooden spade having both sides of the blade reduced to a sharp edge as well as its lower edge. This tool was employed in trimming down scarp batters.
4. The *koko;* a form of scoop or short handled shovel, often made by attaching a handle to a piece of the dry inner bark of the *totara* (*Podocarpus totara*) tree, such bark being known as *rangiura*. The curious form of scoop made in the form of a canoe baler by East Coast natives was called an *okooko*.

When forming a double defence of fosse and rampart, the aim was to utilise the spoil from the former in building up the rampart. The soil was loosened with the *ko, kaurori* or *wauwau*, shovelled up with spade or scoop, and dumped along the brow of the fosse within the lines already marked out for the rampart. As the fosse deepened and the rampart rose, the earth was put in baskets (*kete*) made of green strips of *Phormium tenax*, or a kind of creel (*toi* and *toiki*) made of split supplejack cane (*Rhipogonum scandens;* the *kareao* and *pirita* of the Maori), and so passed up to those engaged in forming the rampart. When the height became too much to so pass the baskets directly by hand, cords were attached to them by means of which the builders hauled them up. In the case of a stiff adhesive soil, such as certain forms of clay, we are told that no kind of binding material was used, but usually the rampart was carried up in alternate layers of earth and such binding material as bracken (*Pteris aquilina*), *manuka* brush (*Leptospermum ericoides*) and, less frequently, the *tumatakuru* (*Aciphylla*), the first named was most frequently employed. During the late unpleasantness with the natives in the 'sixties' of last century, we adopted the above method in building our redoubts, adding a banquette to the inner side of the parapet. As each layer of earth was deposited on its layer of binding material it was tramped down so as to consolidate it. So covered the fern would resist decay a long time, and, by the time it decayed, the rampart would have become a solid mass, of which only the upper surface would occasionally need renovation. The layers of binding material were called *whakapuru*.

The natives of the Wai-rarapa district assert that, in some cases, pieces of *aka-tea*, the durable stem of a climbing plant, were laid transversely across the ramparts as the building thereof proceeded, so that the inner ends projected somewhat from the face of the rampart.

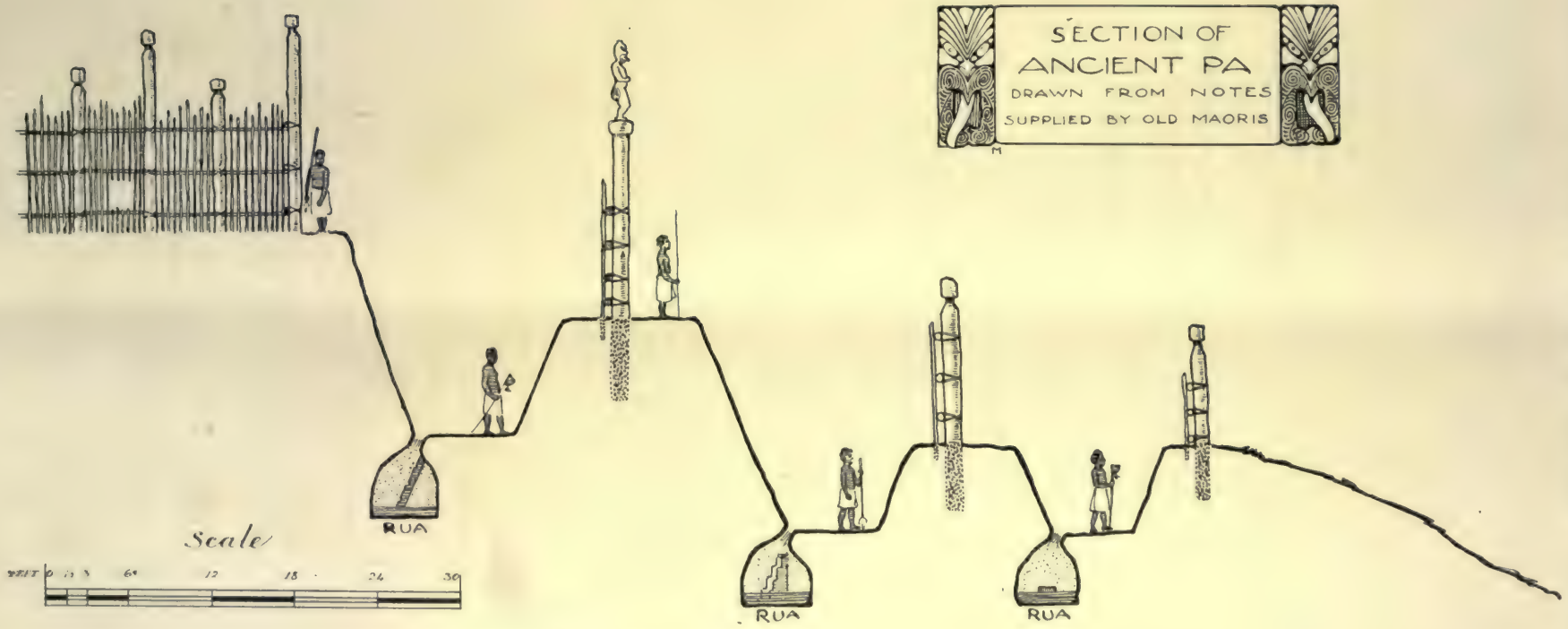


FIG. 16.—DEFENCES OF A PA MAIORO.

Illustrating method of defence by means of rampart, fosse, scarp and stockade. The summits of the high ramparts would be wide enough to allow defenders to stand thereon inside the stockade. Rua kai or food storage pits often excavated within a fosse in order to economise space.

See p. 38.

[Drawing by J. McDonald.

This was to enable the garrison to detect any tunnelling operations by an enemy located in or under the outer ditch, such operations would cause the projecting length of *aka* to move, which would betray the presence of a sapping party. Such a rampart was known as a *maioro ranga.* This statement appears somewhat dubious to the non-professional mind, but is given for what it may be worth. One might ask:—"What is the *whakapuru* of your *pa?*" Should the answer be:—"*He ranga,*" then was it known that such a place would be difficult to take. Another statement was made by a native that slabs of the aerial roots of tree ferns were occasionally used as packing, but such was probably seldom used, as the pliable bracken would be more accommodating and useful. At one part of the Weraroa, a modern, gun fighter's fort, a layer of tree fern trunks seems to have been laid under an outer parapet, but that was probably European work.

The Tapatahi *pa* at Waipiro, and the Orongo-iri *pa,* in the same district, the latter seven generations old, are said to have had their ramparts composed of stones with clay worked in between them while in a wet condition. A wall so constructed had pieces of *aka poananga* (stem of *Clematis*) mixed with the clay in order to bind the fabric. Such a wall was described as a *koperu* or *parihi.*

The writer has seen fosses up to 20 ft. in depth, but some exist that are even deeper.

Escarpments.

Apart from the scarps of fosses and of ramparts and superimposed walls, or parapets; we have to deal with escarped faces of hills. This is a very common and widespread form of earthwork defence, and indeed the only one seen in some of the old fortified places, as we shall see anon. This form of defence is found in different types of the *pa maori.* We see it in conjunction with fosses, ramparts, parapets and stockades, and also with stockades only. In some few cases we find a fosse at the base of a scarped hill face, as at Te Koru. Again, we occasionally find a parapet on the brow of a scarped face, as at Tapa-huarau No. 1 *pa.* All such scarped faces had a stockade along the brow. Such escarpments were of many heights, thirty feet is not an uncommon height in the case of big terraced hill forts. The batter of such defences like those of fosses, depended upon the nature of the soil worked. They were steep pitched and in some stiff soils almost vertical. Then again, the Maori knew, as well as do our road-makers, that some exceedingly light and friable materials, such as pumice sand, stand weathering better on a steep batter than on a more sloping one. In the case of a built up rampart or parapet of course the *whakapuru* or binding material enabled the constructors thereof to carry up a steep batter however loose the soil might be. As a rule the Maori formed his scarps and batters less steep than ours.

The terraces of a terraced hill fort are called *tuku* by the Tuhoe and some adjacent tribes. Tarakawa, of the Arawa district, applied the name *rengarenga* to them, while *paehua, parehua, upane* and *paeroa* are names used in other districts. In the case of a terraced or scarped mound or small hill, the elevated platform was erected on the summit area, as seen at the model *pa* at Rua-tahuna.

In breaking up a stiff clay soil the form of *ko* used was one with a narrow but strong blade of almost triangular section, made from such hardwoods as *ake-rautangi* and *maire* (*Dodonæa viscosa* and *Olea*), according to an East Coast native. It was about 8 ft. in length; its upper end might be adorned with a carved design, such as the *ahowai* pattern, a scroll like form. The prominent longitudinal edges of the triangular sectioned lower part would be termed *riaka* or *io.*

Stockades.

The timber stockade was one of the most important defences of native forts. In the case of the type of *pa* termed a *pa tuwatawata* it might be the only defence if the place was situated on flat land. In the case of a hill fort it would be accompanied by scarped faces, etc. In the old days of hand to hand fighting the Maori well knew the advantage of the defence when the enemy was compelled to expend most of his energies in escalading a precipitous scarp.

As is shown in the illustrations given herein, there were several forms of stockade employed by the Maori. In the case of a hamlet or collection of a few huts used as a temporary residence when sea fishing, fowling, or working in cultivations, etc., the defences were not formidable. A comparatively light stockade defence, showing no carved posts or other elaborate work, was deemed sufficient, the approach of enemies causing the people to retire to their permanent stronghold. Again, for divers reasons, certain fortified places possessed but one or two stockades of no impressive appearance, for example a hill top that was difficult of access. But the superior class of fort, the *pa whakairo,* often presented four lines of strongly built stockade, and occasionally more; a terraced hill fort might possess a dozen such, or even a still greater number.

Now in most superior forts one of these stockades was selected as a *katua* or main stockade, which was of better and stronger construction than the other lines; more work and care were lavished upon it. It was also noted for two peculiar adjuncts; some of its supporting posts were much higher than others and had their upper ends carved into grotesque human images,—and in this stockade was usually situated the principal gateway of the fort. This was the show gateway of the place and, in some cases, had a carved post flanking it on either side, in others the entrance was through an aperture in the base of a huge slab of timber which carried some carved designs, for which see illustrations. In the more orthodox style of forts this main stockade was the third in order from the outside. Williams' Maori Dictionary gives the following order of stockades in such a *pa,* with their names:—

1. Pekerangi.—First and outermost stockade; an elevated screen.
2. Wita.—Second line of stockade.
3. Katua or Tuwatawata.—Third line of stockade; the main fence.
4. Parākiri.—Fourth and innermost stockade.

The *pekerangi* or elevated outer stockade was also known as a *teki* and *kereteki.* This word *teki* carries the meaning of 'suspended.' Cf. *whakateki,* to suspend so as not to reach the ground. The term *rangi* conveys a similar meaning, as in *pekerangi, whatarangi, purangi,* etc. On the East Coast the outer raised screen was sometimes called the *wita* or *karewa.*

This arrangement might be taken for a somewhat idealised model, or as peculiar to some districts, for a great number of old forts had a different arrangement of defences, in fact the matter depended largely on the configuration of the ground, and also on local usages. In some cases the second stockade was the main one, in others it was the outer stockade that was the strongest, as noted by Colenso and corroborated by Hurae Puketapu.

In some *pa* stockades were erected on the ramparts, in others they were a distinctly separate defence, and no form of palisading occupied the earthen walls. The latter seems to have been a common custom on the east coast, as far south as the Wairarapa district. Information collected from natives of different districts on this and some other subjects is decidedly confusing. Probably the stockade was, at least in some cases, erected first and the earth wall or dyke formed up afterwards so as to enclose them. This would be in order to gain stability for the stockade. Cook states that he saw stockades on ramparts at Mercury Bay, but not in their middle parts, thus giving defenders space to stand on the top of the wall. Nicholas saw the same arrangement in 1814 at the Bay of Islands, and other evidence will be forthcoming. Both of these also noted stockades not so elevated and in the same forts. In Fijian forts ramparts were surmounted by stockades.

In Mr. T. White's short account of an old native fort near Herbertville (*Transactions N.Z. Institute,* vol. 32, p. 398), he remarks:—"It is quite a novelty, I believe, to find that the Maori has defended a position by earthworks, the present height of which would seem to indicate that they could never have been surmounted by a palisade of woodwork. As it now stands there is a double wall of earth, having an interval of about 12 ft. between the two walls, and also a broad dry ditch. The outer wall is almost or entirely perpendicular on both faces; it stands

FIG. 16A.—LIGHT MODERN PALISADE OF POST-EUROPEAN TIME. [*From an early photograph.*

5 ft. in height and shows signs of a ditch along its outer face.....The inner and parallel wall is similar, but is 6 ft. in height. Neither wall shows much sign of decay."

Two forms of earthworks were constructed in former times, one form being a comparatively low dyke of six to nine feet in height, with a stockade on it; the other was a higher, more wall like earthwork. These high walls are said to have had no stockade or any form of palisading on them, but the fighting men of the garrison manned the top of the wall when the place was attacked. The rampart seen bearing a stockade by Cook was eight feet high. Where a stockade was erected on an earthwork the defenders stood behind it on the top of the wall, and thrust their spears through the palisades to repel attackers, or, in some cases, they were stationed on elevated platforms secured to the inner side of the stockade and supported by posts. It will thus be seen that these earthen ramparts were of considerable width in order to accommodate the defenders who stood on them.

The trenches of Tongan forts were about twelve feet deep, while the ramparts were wide enough on top to allow defenders to be stationed thereon. Note a sentence in Mariner's work—"On the top of the banks [ramparts] a number of warriors, armed with clubs and spears, were running to and fro."

The following are Colenso's remarks on the defences of native forts referred to on p. 41:—"No observable order was followed in placing their houses in a village; throughout which there were ways of communication in all directions, but no proper streets; each sub-tribe or family generally enclosed within an inner fence, having around their own houses apertures for ingress and egress. The outer fence of the village, often composed of whole timber trees set in the ground, without their bark or branches, and from fifteen to twenty or even thirty feet in height, and strongly secured with transverse timbers cross-lashed to the uprights with durable supplejacks and vines from the forest, looked very formidable and was very strong. All its posts were surmounted with human figures as large as life, elaborately though roughly carved out of solid wood, with faces in every conceivable or inconceivable state of distortion. Inside this was generally a second wooden fence, made like the outer one, but of lighter materials; within this were excavated earthworks. Sometimes the wooden fences, or some portions of them, were raised on earthworks; and sometimes they were made to overhang a cliff or side of a hill, as a *chevaux de frise,* presenting a low angle with the horizon."

It is doubtful if any fort had all its stockade posts carved. and the *kareao* or supplejack would not be used save as a temporary lashing; it is not durable. The opening part of the description of the stockade looks as if the whole fabric was composed of huge trunks or posts, which is improbable and contrary to the evidence. The large heavy posts were closer together, in some cases, than the usual 6 ft. or so, and occasionally a stockade was constructed with only four or five palisades between two posts, which would mean that the heavy posts were about 3 ft. apart. The description of such a defence has been handed down in tradition. We know of a few cases in which none but very heavy timbers were used in the construction of a stockade.

Hurae Puketapu, of the Wairoa district, East Coast, states that he has heard his elders remark that stockades were not erected on ramparts in that district, but outside them. The series of defences known as *aparua* consisted of an outer stockade, inside of which was a trench, then another stockade inside that, and then an earthen rampart as an innermost defence. The outermost stockade possessed the largest and tallest posts, those of inner stockades were smaller. The large, tall posts were termed *himu;* they were carved and named after ancestors. The rails were lashed inside the posts. In lashing the palisades two methods were employed: the *apatahi* and *kauwaerua.*

Hurae illustrates his remarks with two sketches which show the *apatahi* to be a single lashing and apparently a running one, while the *kauwaerua* is a crossed lashing. The *aparua* method of fortification, as described by him, corroborates other statements made by natives of the East Coast as to the innermost defence being an earthwork. The statement as to the outermost stockade

being the heaviest, and the one containing carved posts, corroborates Colenso's account, and shows that the arrangement of stockades given by Williams was by no means always adhered to, indeed many *pa* possessed no more than two lines of stockade, and some had but one.

The position of the rails, as to whether or not they were lashed on the inner side of all posts is a somewhat disputed point. In late times they seem to have been not infrequently on the outer side, or possibly on the outer side of some posts only, as noted by Major-General Robley and others during the fighting in the 'sixties.' This may have been on account of the use of fire-arms demanding fighting at longer range. Several of our best native authorities state that rails were fixed inside all posts in pre-European times. The palisades were secured inside the rails. The trench between the two stockades of the *aparua* was not universal, and may not have been a pre-European usage.

Okuratope Pa.

Of a *pa* seen at Wai-mate, in the north, Nicholas writes:—"The first objects that attracted our notice, as being the most prominent, were the fortifications; and these might well deserve the term, for they displayed in their construction a skill and ingenuity most surprising, for persons so totally ignorant of all principles of science. The fortifications we had hitherto seen round the towns we had visited, compared with these, evinced neither design nor execution, appearing only as the clumsy devices of wild barbarians, while by a parity of contrast, the others would seem finished specimens of civilised workmanship. A strong palisading of heavy posts placed quite close to each other, and rising above twenty feet in height, formed the first bulwark that encompassed the town; the entrance was by a postern five feet in height and two in breadth, on the outside of which were some carvings of human heads, cut out with all the semblance of stern vengeance, and seeming to grin defiance at the rude invaders. Within the palisading, and attached to it all round, was a strong back of wicker-work, which the inhabitants had constructed for the purpose of obstructing the lances of their enemies; but at convenient intervals they had made port-holes, through which they could keep up a fire of musketry upon the besiegers. At a short distance from this strong rampart, on the inner side, was a space of about thirty feet, where they had dug a moat, which being filled with water, defended that part of the hill that was most accessible to external assault; and behind this moat they had thrown up a steep mound, on which was constructed another line of palisades, of the same height and strength as the former. The moat, which was at least nine feet in breadth, defended an entrance formed by another postern; and between this and the last approach to the town, there was an intermediate space of eighty feet, at the extremity of which the hill was cut down perpendicularly about fifteen feet; and on its summit rose another row of palisading that encircled the *pa* and completed the works.

"Thus strongly fortified, the inhabitants, if well supplied with provisions, would be enabled to hold out against any attacks of their enemies, however violent; what they would have most to apprehend, would be the setting fire to the palisades; but even should this event happen, they could retire to the summit of the hill, where the advantage of situation would give them a decided superiority; and should the invaders gain that, they might still defend themselves, at least for some time, within the enclosures round the houses, each of which was encompassed by a strong barrier of stakes.....On entering the town, we found it to extend over the whole summit of the hill; and the number of houses, including the stores for their *kumara* and potatoes, were more than one hundred, the population being from two to three hundred souls."

This was the Okuratope *pa* at Waimate, Bay of Islands district, to which place Nicholas accompanied the Rev. S. Marsden. Here again, apparently, stockades were seen in both positions, as separate defences, and also situated on ramparts. The wicker-work mentioned as lining the stockade is quite unknown to us and cannot have been a common usage. The water moat is also an otherwise unknown item, and highly remarkable in a hill fort. The steep mound was evidently a *maioro* or rampart, with a stockade on it. The scarped hillside surmounted by a stockade is worthy of note.

FIG. 17.—SITE OF AN OLD STOCKADED VILLAGE, HAWKES BAY DISTRICT, SHOWING THE MASSIVE POSTS FORMERLY USED.

See p. 46. [*From an early photograph.*

At this date, 1814, the northern tribes had acquired some firearms and the transition stage of Maori fortification was at hand, though perhaps the only changes made at first would be the abandonment of fighting stages and exposure on ramparts, and the seeking of better cover against bullets in stockaded lines; the traverse and casemate phase came later.

The following is the Rev. S. Marsden's account of the Okuratope *pa*, as taken from his Journal and published in McNab's *Historical Records of New Zealand,* vol. 1, p. 368. This visit was in December, 1814, and at that date but little change could have been made in native methods of fortification in order to meet changed conditions, for the northern tribes were only just obtaining firearms:—

"This village contains about two hundred houses, and is situated on the summit of an almost inaccessible hill, and strongly fortified both by nature and art. Three very deep trenches have been cut round the sides of the hill, one above another, and each trench fenced round with whole and split trees from 12 ft. to 20 ft. high. We entered this extraordinary fortification through a narrow gateway, when Shungee [Hongi] showed us how he defended his place in time of war. He had one small secret corner where he could be concealed and fire upon the enemy. Every little hut in this enclosure is fenced round. Some of the storehouses for the reception of their spears and provisions are about 30 ft. long and 20 ft. wide. They are also well built; the roofs are thatched. Some of the eaves extend three feet over the sides in order to carry off the water and keep the building dry. In the centre of the fort, on the very summit of the hill, a stage is erected upon a single pillar, about 20 ft. long and 3 ft. broad, hewn out of a solid log, and elevated about six feet from the ground. Upon this the chief sits, either for pleasure or business, just as occasions require him, to consult with his people. It commands a most extensive view of the surrounding country in all directions. Near this stage is a little hut about four feet from the ground, three feet long and two feet wide, with a little image placed upon the side of the door (which does not exceed one foot) ; a seat also is placed in front, upon which the chief's lady sits when she eats her provisions, which are deposited in this little bulding."

Herein we note that stockades were erected between the fosses, though this writer does not mention ramparts. There is an irritating lack of detail in the descriptions of many of the early writers.

The late Archdeacon Walsh wrote of Okuratope:—"It is situated on Mr. Simon Clarke's land at Waimate, and is a good specimen of the *pa maori.* The line of the *pekerangi* (outer stockade) can be plainly traced. It was occupied by Hongi and is described by Nicholas. The *pa* is now entirely covered with a second growth of bush, and near by is an extensive *wahi tapu* where the bones of the dead were placed."

Stockades were constructed by setting heavy posts firmly in the ground as representing the main strength of the fabric. On the inner sides of these posts were lashed two or three rails horizontally and at different heights. To these again, on the inner side were lashed the palisades, rough lengths of split timber set firmly in the earth in a vertical position.

In all lines of stockade except the main one the posts were of about the same size, and, though not of the same height above ground, yet the difference was not great. In the main stockade however, two types of posts were employed, one much taller than the other, and each having its own peculiar style of embellishment. The shorter posts were the more numerous, and were placed about 6 ft. apart, or from 5 ft. to 8 ft. They were generally higher than the palisades, but much shorter than the superior posts, say from 10 ft. to 15 ft. in height. The upper end of each one was hewn into the form of a round or rounded knob, said to represent the head of an enemy as it would appear when stuck on the top of a palisade, an old custom in war. These posts were from 10 to 18 inches in diameter. A traditionary account says that they were three fathoms in length and embedded half a fathom in the earth. In Fig. **17**, p. 45, are seen some of these heavy stockade posts of the *pa maori.* They were known in different districts as *tumu, whakaporo, pou tokotu, tamarua,* etc. That would mean that they would stand 15 ft above ground, but I would here especially warn readers that the most persistent feature in the *pa*

maori was irregularity. In the form, extent and plan of defensive lines, in height of palisades and posts, in the sub-division of the interior and its passages and hut location, the native fort was ever irregular in detail. Much labour was expended on fosse and rampart, scarp and stockade, in delving, excavating, hewing, carving; but no attempt was ever made, apparently, to produce regularity in such structures. Hence posts and palisades were of different heights, the summits of the latter being the acme of irregularity. See Fig. **18**, p. 48. This effect seems to have pleased the Maori, however much he admired regularity and harmonious lines in other channels of industry. A comparison of the Maori fort with the Maori canoe or house would tend to interest an observer in the laws and ideas governing Maori technology.

The semi-detached tops of these posts might be of rounded form, of ovoid longitudinal section, or cut square at top and bottom. The latter form has probably been more common since the introduction of steel tools than it was in olden times. They emblemised the spirit of revenge and derision which prompted the Maori to impale the heads of slain enemies on palisade tops.

In addition to these posts there were, in the main stockade of a superior fort, others that were considerably taller and often of greater girth, though fewer in number. See Figs. **18** and **19** p. 48. The superior posts were known as *pou matua, pou toko, himu, pou take* and *pou turangi.* They were not placed at regular intervals, but on level ground it might be said that about every fifth post was a *pou turangi*, to strike an average. There were, in many cases, two at the main entrance, one on either side of the gateway. There would be one at any angle in the stockade, and at any prominent part thereof. Some of these posts were as much as thirty feet high above ground, and were sunk one *whanganga,* or fathom (double arm span; say 6 ft.) in the earth. Their upper ends were often carved into grotesque human figures of large size, often in attitudes of defiance, with distorted features. See Figs. **20** and **21**, pp. 49 to 54. They invariably faced outwards and natives state that they were meant to terrify enemies; perhaps as a token of defiance would be more correct. The eyes of these wooden warriors were often represented by countersunk pieces of gleaming shell (*Haliotis iris*). Such figures were usually named after male ancestors of the clan folk residing in the fort. These posts pertained to the principal stockade only, though inferior fences had the shorter posts. They were of a durable timber and often hewn into a flatted form approximately rectangular. The great desideratum was firmness and durability.

There is undoubtedly some confusion as to the application of certain terms employed to denote the various defences of a fortified village. Thus, in some districts, the taller carved posts are known as *tukuwaru* and the shorter ones as *himu,* while in other places the application of these terms is reversed. This kind of confusion is noted in two districts adjacent to each other, as Te Wairoa and Rua-tahuna. In some parts a stake or palisade is called a *wana*, in others a *tuwatawata.*

When a so-called model *pa* was erected at Papawai by local natives, the principal chief decided to face the carved post figures inwards—explaining that, in these peaceful days of British occupation, there is no longer any necessity to guard against attack from without a village, but that, so far as he could see, present enemies and dangerous folk are all internal ones.

A small sized post of this type from the Otakanini *pa,* Kaipara district, is in the Auckland Museum. See Fig. **19**, p. 48. It is about 10 inches square and has its longitudinal edges chamfered. The upper part is carved into the semblance of a human figure about five and a half feet high. The post has evidently been hewn with metal tools and is a modern item, not pre-European.

Shortland speaks of—"..... the practice, when a new *pa* is erected in time of war, of naming some of the larger posts of the stockade after the chiefs of the hostile tribe, and then firing at them, by way of expressing the deadly nature of the feud." This was a modern custom and by no means a widespread one.

The girth of these taller posts is said to have been about 4 to 6 ft. or say 15 to 24 inches in diameter, where timber was plentiful and fairly easily obtained. Some old ones seen by the

FIG. 18.—STOCKADE OF A MODERN PA.

The irregular aspect of palisades is here illustrated. These modern stockades show the rails secured to the outer sides of posts.

[From an early photograph.

A.

B.

FIG. 19.—A. CARVED POST FROM OTAKANINI PA. See p. 47.

B. CARVED POST AT WAITAHANUI. Set up to mark a line of tapu across Lake Taupo to Pukawa shortly after the death of Te Heuheu Tukino I. in the landslip at Te Rapa in 1846.

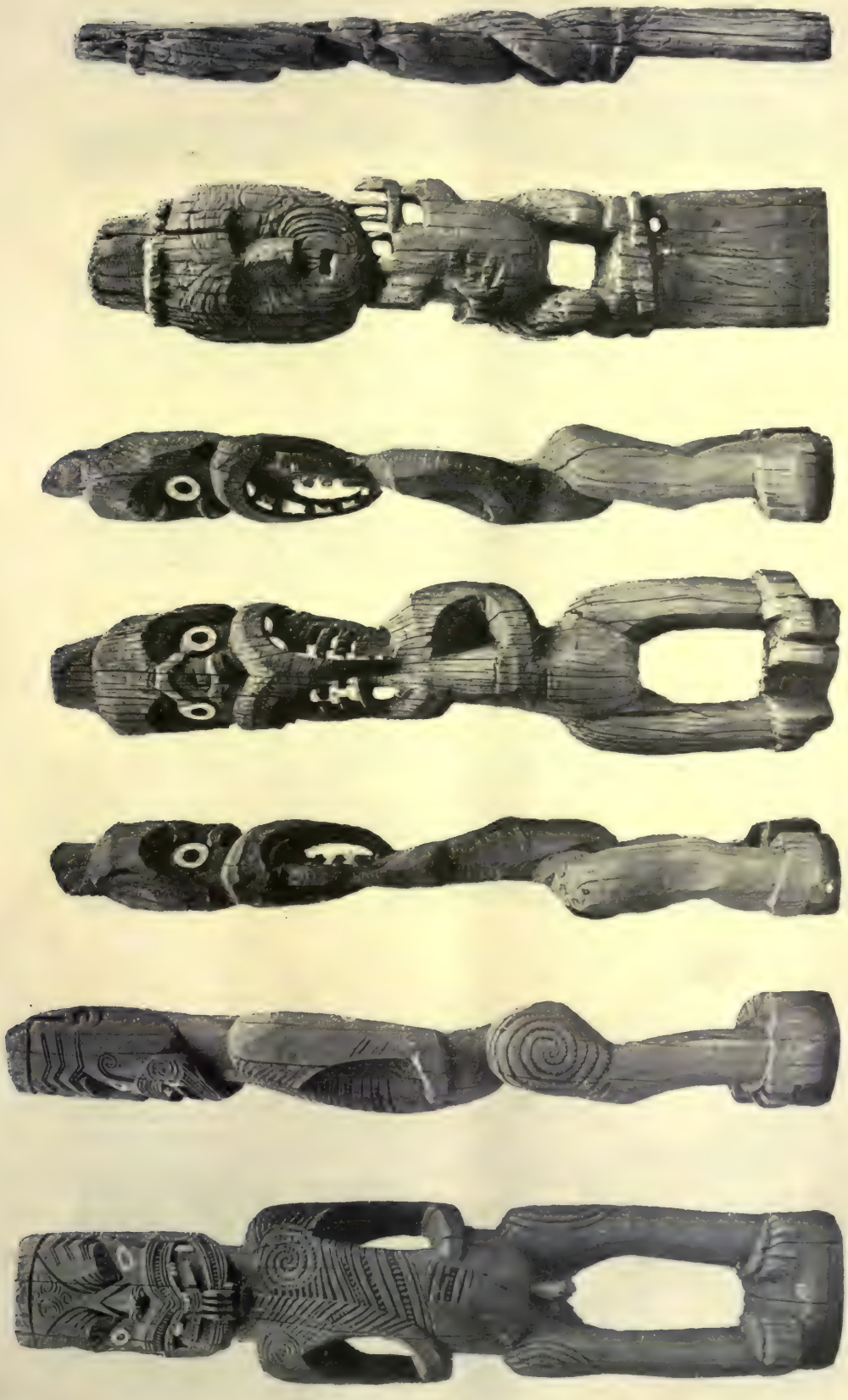


FIG. 20A.—CARVED FIGURES OF STOCKADE POSTS.
These figures have been preserved by Museums, the posts being often too bulky for transportation.
See p. 47.
J. McDonald, Photo.

FIG 208.—CARVED FIGURES OF STOCKADE POSTS.
These figures have been preserved by Museums, the posts being often too hulky for transportation.
See p. 47.
J. McDonald, Photo.

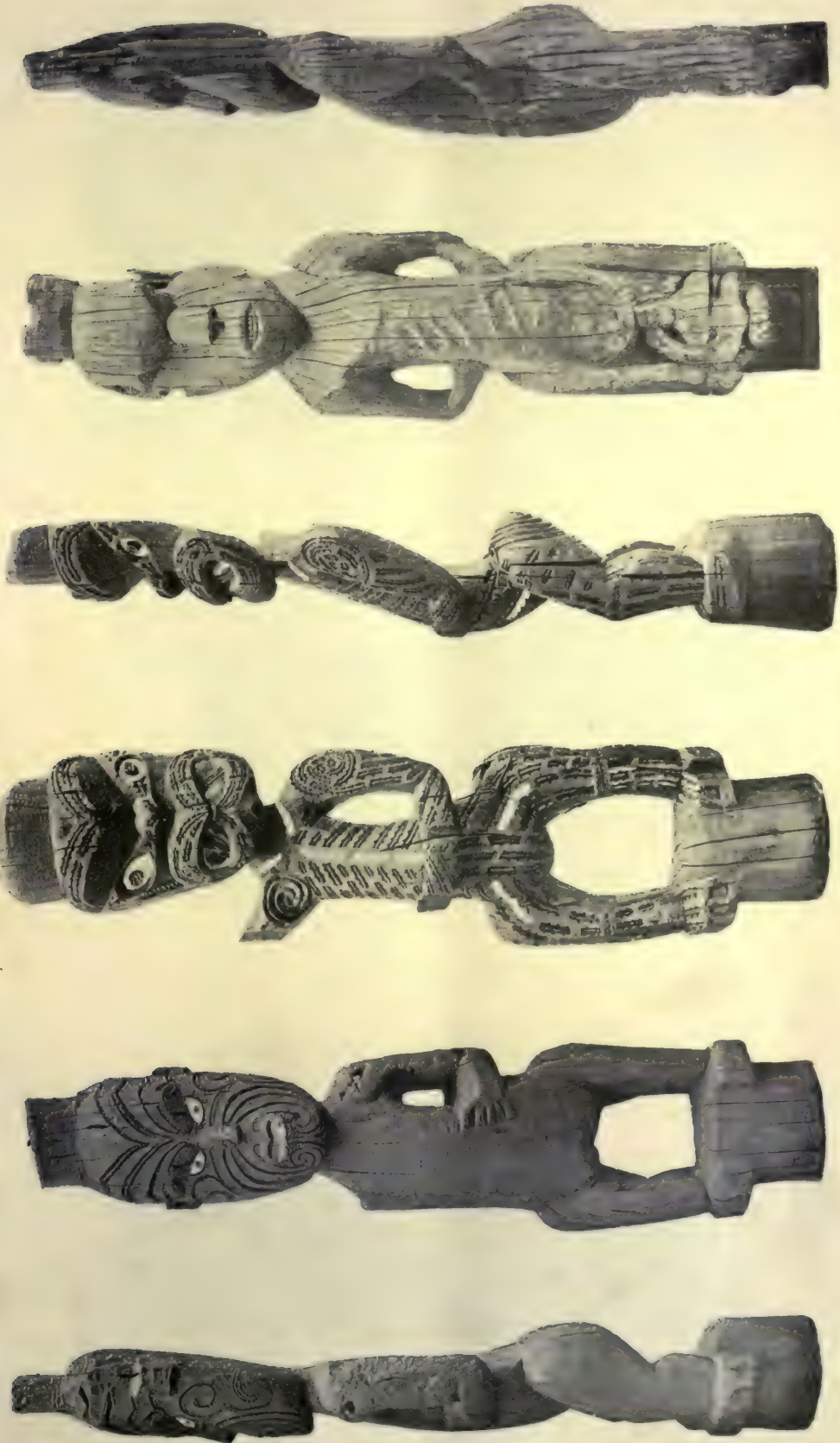


FIG. 20c.—CARVED FIGURES OF STOCKADE POSTS.
These figures have been preserved by Museums, the posts being often too hulky for transportation.
J. McDonald, Photo.

See p. 47.

FIG. 21A.—CARVED FIGURES OF STOCKADE POSTS.

See p. 47.

[J. McDonald. Photo.

FIG. 21B.—CARVED FIGURES OF STOCKADE POSTS.

[*J. McDonald, Photo.*

FIG. 21c.—CARVED FIGURES OF STOCKADE POSTS.
The doorway surmounted by two figures has formed the entrance to a fortified village at Lake Okataina. See Fig. 38.
height 25 ft., now in Auckland Museum. [*J. McDonald, Photo.*

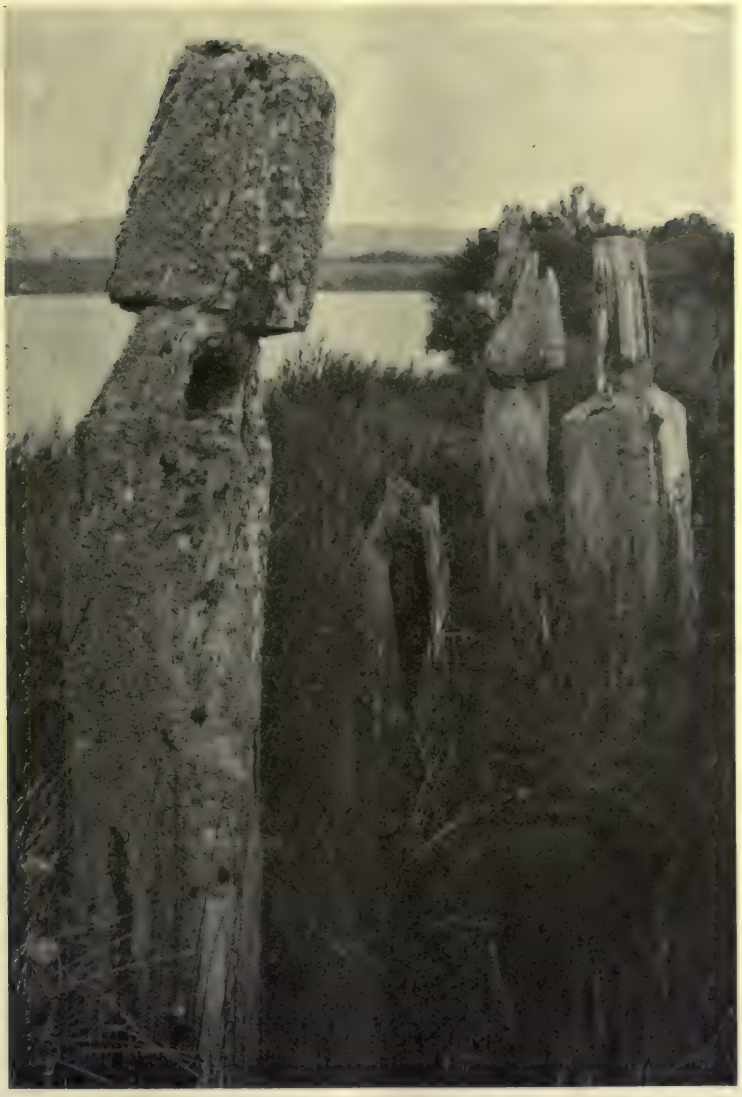


FIG. 22.—POSTS OF THE OLD SUNK PA AT OHINEMUTU, ON THE SHORE OF ROTORUA LAKE.

[*J. McDonald, Photo.*

See p. 56.

writer at Okarea, a *pa* on the Wai-a-tiu tributary of the Whirinaki river, were 1½ to 2 ft. wide and perhaps 10 inches thick, hewn balks of heart of *totara*. They were also very tall. This timber was much used for stockades on account of its durability; it is also very easily worked, as in splitting, hewing and carving, also is it light when seasoned. Such hardwoods, however, as *puriri* (*Vitex lucens*), *maire*, and heart of *kowhai* (*Sophora tetraptera*) were considered more suitable, being even more durable and not so readily destroyed by fire. They were much more difficult to work, especially with stone tools, and were often left unhewn, being erected in the round. The *puriri* lends itself especially to such usage, as it carries very little sapwood. The posts of the Waerenga-a-hika *pa* at Poverty Bay, taken from the hostile natives in 1865 by the Colonial troops, were lengths of *puriri* in the round and very massive. In squaring some of them in later years the axe of the writer cut through innumerable bullets that had just penetrated the thin sapwood and flattened on the hard heartwood. Many of the timbers of old pre-European forts were destroyed by fire, but the butts of posts are often found in the old earthworks. A post butt of the old Maupuia *pa* at Miramar, Wellington, was found to be 16 inches in diameter.

It is said that the timber of the *rewarewa* (*Knightia excelsa*) was used for stockades in the Whanganui district, on account of its not burning readily. It may have been used for palisades but it is improbable that natives would use it for posts; they would decay at the ground line in a short time.

Concerning the *pa* at Ohinemutu, Rotorua, Dieffenbach wrote:—"The structures in this *pa*, the houses, doors and palisades, displayed the most ingenious pieces of native workmanship. I have nowhere else seen carvings in such profusion, and some of them were apparently very old. Many of the figures are representations of the progenitors of the tribe, and the collection of figures in and around each house may be considered as serving as the genealogical tree of its owner."

The old *pa* at Ohinemutu that occupied the small peninsula where the church now stands was occupied long prior to the coming of Europeans. Some of the massive posts of the old stockade still stand, however, though now they are standing in the waters of the lake, showing how the land has sunk, owing to volcanic disturbances. Fig. **22**, p. 55, shows some of these massive posts.

In Fig. **23**, p. 57, we see two lofty stockade posts of an old village at Gwavas, Hawke's Bay district. The village and stockade have long disappeared.

The rails to which the intermediate palisades were lashed might be round saplings, split timber or *aka*, the latter term denoting stems of certain climbing plants, some of which attain a great size. The more durable species were so used, such as *aka tokai* and *aka tea*. These, when dry, become exceedingly hard and tough, so much so that a stone tool would make but scant impression thereon, hence they were desirable as rails, more especially for the outer stockade. Rails of split heartwood of a durable species were much used in the best built forts. As a rule outer stockades were provided with three rails lashed to the posts at different heights, while inner stockades sometimes had but two. These rails are termed *roau*, *huahua*, *paehua* and *kawiti*. The term *kawiti* is said to have been applied to the uppermost rail only, which was the strongest. The principal stockade would have three rails, which would be in as long lengths as it was possible to procure. Rails were lashed on to the posts with a strong crossed lashing, the binding material being strong, tough stems of several species of *aka* or climbing plants (*aka-tea*, *aka-tokai*, *aka-torotoro*). Natives differ in their statements as to whether the rails were placed inside or outside the posts. We have seen that some of the best authorities state that they were lashed against the inner side of the posts, and this is the more credible of the two statements, because a favourite device of warfare was to pull a stockade down. A hundred or two hundred men hauling in unison on a long stout rope can do a lot of pulling. As will be explained later on, the primary strain of the pull came on the palisades, hence they were placed inside the rail; secondarily it came on the rails, which would almost certainly be put inside the posts so that they

FIG. 23.—TWO LOFTY STOCKADE POSTS STANDING ON THE SITE OF AN OLD VILLAGE AT GWAVAS, HAWKES BAY DISTRICT.

See p. 56.

could not be separated from it. Finally the heavy posts were firmly set fairly close together to stand such a great strain. These posts were the true strength of the stockade, the last word in massive solidity and resistance. In the case of a well constructed stockade to pull it down meant overthrowing huge posts set five or six feet in the ground by a horizontal or downward pull, which, as Euclid would say, is absurd. The Imperial troops tried it in the north, but had to resort to digging. In the case of a stockade of a lighter nature, the plan has frequently succeeded.

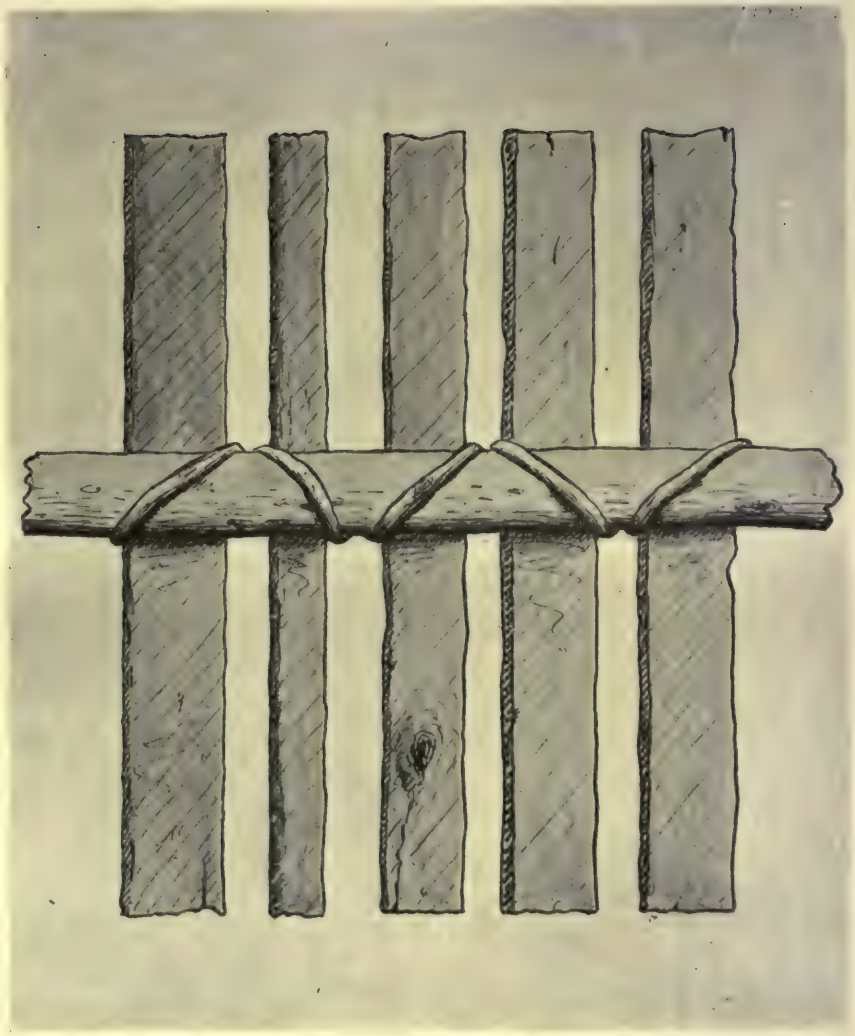
The same lashing material was used in the binding of the palisades to the inner side of the rails. Such palisades were rough split timber of unequal heights four to eight inches wide, and set firmly in the ground, besides being lashed to each of the two or three rails. The space between two palisades would be from three to four inches, giving space in which to work the long spears used in defending such places. The palisading would be from eight to twelve feet high but no attempt was made to have the tops of an even height. Some sketches of early travellers showing nice even topped rows of palisades, posts of the same height at regular intervals, and rails outside posts, must be looked upon with suspicion. We know in some other instances how successful some of those sketchers were in depicting what did not exist.

Palisades were known as *wana* or *wanawana,* while a stockade as a whole was *tuwatawata,* or *wawa,* though these terms were also used specifically for the main line and the one inside it; in fact each and every stockade had its specific name, whatever its situation might be, hence a generic term for stockades was seldom employed. In lashing on the palisades two persons worked together, one on either side of the stockade, to facilitate the operation, and passing the binding material from one to the other. Two forms of lashing were employed, a single running lashing and a crossed lashing. The former method is known as *apatahi* and *tapena tahi;* the latter as *kauaerua* (or *kauwaerua*) and *tapena rua,* occasionally as *tamanga.* See Fig. **24**, p. 59. The *aka* used in lashing were green, tough and pliable; they were sometimes placed in water to keep them soft, and taken out as required. The illustrations given show the two methods. The *apatahi* or single method should show the lashings passed three ply round rail and palisade, but not in our left to right mode of passing; it is passed from right to left, which to us looks as if it was done backwards. Having been passed over a palisade three times, the tie is then carried on to the next palisade and over it on the other diagonal, as shown. It is a free running lashing without any reeving, with ends clamped under the lashing turns, a common Maori device.

The double or crossed lashing (*kauwaerua*) shows two or three turns round palisade and rail, then a reverse and two or three turns on the other diagonal so as to cross the lashing, after which the tie is carried on to the next palisade. Neither illustration shows any passing of the tie down between the three ply lashing and the intersection of rail and palisade, so as to cinch the lashing, as was sometimes done, and the advantages of which are manifest, for this process practically rendered each lashing of a palisade an independent one. The *aka* employed as a lashing material, though pliable when green, is very hard and rigid when dry, and when so reeved through a small aperture in the former state, would be scarcely moveable when dry. Should the attacking force succeed in cutting the lashing of a palisade, it would obviously be a great advantage if other palisades were not loosened thereby. Such reeved lashings were certainly sometimes employed. The cross lashing, as implying additional strength, would be of special service, especially in the construction of the outermost stockade.

Te Heuheu, of Taupo, states that in his district, when men were searching for the *aka-tea* in the forest, to serve as a lashing material, it was deemed an unlucky occurrence if found in abundance, a somewhat singular conclusion to come to. Among the Tuhoe tribe, a scout would endeavour to obtain, under cover of darkness, a small part of the lashing material of the stockades of an enemy fort, the smallest fragment, such as one of the minute aerial rootlets, was quite sufficient. Over this medium certain ritual was performed that was believed to be most efficacious in weakening the power of the garrison of the fort, or affecting the *mana* of the *pa.*

A.



B.

See p. 58.

[*H. Hamilton, Photo.*

FIG. 24.—METHODS OF LASHING STOCKADES.

[*Drawing by Ethel Richardson.*

Lashing material was the *aka* or pliant stems of climbing plants.

A.—The *kauwaeroa* or double crossed lashing.

B.—The single running lashing termed *apatahi*.

If the rails were of dressed timber, a rare occurrence, hewn into regular and shapely form, their width would be five to seven inches, thickness four or five inches. In building a superior fort, much care was exercised in order to make a good job of it and render the defences sightly to the Maori eye, notwithstanding their apparent aversion to uniformity in height in regard to palisades. On the East Coast the term Kahukura-tiwhana was applied to a well constructed *pa*, that being the name of a famous war god, whose aid was always invoked, and whose visible form is the rainbow. Such a *pa*, remarked an old native to the writer, inspires a feeling of dread in the beholder.

The following chant is an old watch song sung by sentinels in a fortified village, but also chanted by those engaged in lashing stockades:—

"Tenei te tuwatawata
Tenei te aka te houhia nei
Tenei te mounu ko au kai roto
E..e..e..i..a..e!"

(Here is the stockade; here the lashing being bound. Here am I, the bait, within.)

Hauling and Erection of Heavy Posts.

The labour of hauling and erecting the long and massive timbers used as posts in stockades was always a heavy one. In many cases they had to be hauled a considerable distance, owing to there being no suitable timber near at hand. Inasmuch as most forts were situated on hill tops, such great balks often had to be dragged up hill by main force. Their length would be from 15 ft. to 30 ft., and they were dragged by a number of men pulling on ropes attached to the balks. Some post butts dug from the site of an old *pa* at Te Hurepo, in the Whakatane Valley, showed projections left when the posts were hewn into form, apparently to facilitate the securing of ropes thereto for hauling purposes. The method of hauling was the same as that employed in conveying a newly made canoe from the forest, and the following account of the procedure was contributed by the late Tuta Nihoniho, of the Ngati-Porou tribe of the East Coast district:—

In hauling very heavy posts, three hauling lines were used, one being attached to the forward end of the log, and two to the rear end, one on either side. The ropes were placed round the logs, but were countersunk in grooves so as to avoid unnecessary friction in hauling, and to preserve the rope. These ropes were made of split leaves of *Cordyline* in a *rauru*, or five strand plait. The hauling of such weights was done to a time song, as in hauling canoes. The following is a specimen of such chanted hauling songs, known as *to*, or dragging songs:—

Fugleman: "Ko puke kiore."
Company: "Auaia!"
Fugleman: "Ko waero kiore."
Company: "Auaia!"
Fugleman: "Kari ki te rua."
Company: "Auaia!"
Fugleman: "Kari ki waenga."
Company: "Auaia!"
Fugleman: "Kumekumea."
Company: "Totoia!"
Fugleman: "Tahetahe ana."
Company: "Te wai toatoa."
Fugleman: "Ko wai au e kiki."
Company: "Wawa!"
Fugleman: "Eke!"
Company: "Eke penuhi."
Fugleman: "Taiki..E!"
Company: "Ko tore mata te ra-hoi-ra-ki..i..i!"

The company of haulers all join in the short responses, which stimulates them to concerted action, as observed when our seamen are hauling on a rope. When hauling such a weight uphill, long ropes were secured to the log, or canoe, then, in some cases, carried up the hill and passed round a tree, or firmly embedded post, then led down again, so that the *kai-to,* or haulers, pulled down hill, an example of the first primitive form of pulley purchase. Large numbers of men assisted at such tasks. This passing of the rope round the log was certainly not practised in all cases.

In sinking holes for large posts the *ko* digging implement was utilised for loosening the soil, and the loosened soil was taken out with a form of scoop. In the case of a deep hole a *matarau* was sometimes used. This was a tool resembling the old birch broom, and made by lashing a number of wooden tines to a straight shaft. This tool was thrust down into the loosened soil with force, so that a quantity of earth was forced between the tines, when the tool was withdrawn and the earth removed. See Fig. **25**. p. 62.

This curious implement (the *matarau*) we meet with again in far off Borneo, where a similar scuppet, as Ling Roth terms it, is used for the same purpose. It appears to be formed of one piece of bamboo, the bottom end of which is split into a number of strips or pieces; these are forced outward at a slight angle and bound or interlaced with some material, probably rattan, to keep them in position. 'The scuppet is rammed down with a twisted motion and water poured into the hole, the resultant mud clogs inside, the scuppet is drawn out and the mud removed.' For an illustration of this implement, see Ling Roth's *Natives of Sarawak and British North Borneo,* vol. 2, p. 21.

An old specimen of a long handled scoop is in the Auckland Museum. This object I have not seen. It is possible that it was utilised as an earth scoop, as noted above, or it may have been used as a *kapu* for taking fresh water mussels from the beds of lagoons, etc.

Heavy posts were raised by the natives very much as we perform the same task, save that we have the advantage of pulleys. One side of the hole in which a large post was to be set, was dug in a slanting position, so that the butt of the post would slide in readily when the head thereof was raised. Against the opposite and vertical side of the hole was placed a piece of timber, against which the butt of the post came when slid into the hole, and which kept it from gouging out earth from the bank and so partially filling the hole. See Fig. **26**, p. 62. The post having been hauled into position, the head thereof was lifted by a number of men and supported by a *tokorangi*, a primitive horse or trestle composed of two stout poles crossed like the letter X and so lashed together. Then another lift would be given and the post again supported by the *tokorangi.* Two ropes were then fastened to the top of the post, and on these a number of men hauled in order to raise the post. In the case of a tall post it might be necessary to erect a purchase in the form of a gallows, two tall posts with a crosspiece secured high up, over which the rope would be passed. The following *tewha,* or working song, is one used at such labour as raising one of these big posts into position; the conductor of the task acting as fugleman:—

Fugleman: "E iki, e iki e!
Te turoua o whiti
E iki, e iki e!
Te turoua o whiti
Hiki nuku..e!"

Chorus by workers: "Hiki rangi..e!"

Fugleman: "Hiki nuku..e!"

Workers: "Hiki rangi..e!"

Fugleman: "A..ha!"

Workers: "Ka hikitia i tona ure
Ka hapainga i tona ure
Ia..i..a!"

This is said to have been the *tewha* (work song or 'chanty') sung by the offspring of Rangi and Papa when they forced the Sky Parent upwards in order to separate him from the Earth Mother. Then they made the first *tokorangi* in order to support the sky, the lower points of it resting on the breasts of Papa (Earth Mother), the upper ones pressing against those of Rangi.

FIG. 25.—THE MATARAU EARTH LIFTING IMPLEMENT.
See p. 61.

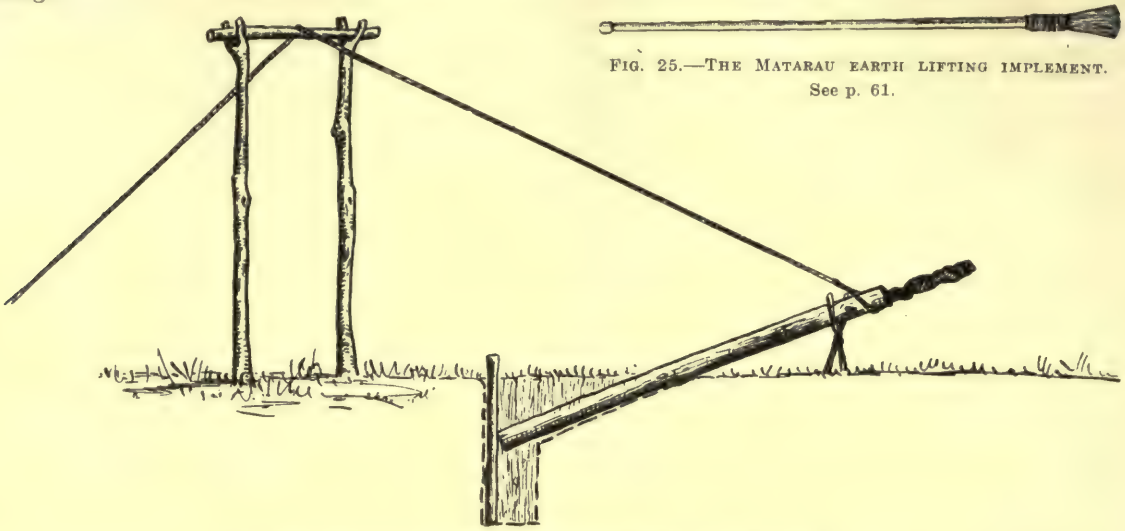


FIG. 26.—ILLUSTRATES METHOD OF ERECTING HEAVY POSTS.
See p. 61. [*Drawing by Ethel Richardson*

The following is another such song employed on such occasions:—

"Tuturi, pepeke hokai o waewae
I te rangi e tu nei,
E tu nei..e!
Mo-hikitia, Mo-hapainga
Mo-hikitia, Mo-hapainga
Whakaeke pari
E tupa whai ake
Whakaeke maunga
E tupa whai ake
E tupa whai ake..ho..i..e."

When a post was placed in position the earth was tightly tamped round it in the hole in order to render it as firm as possible. If a post was needed at some spot where no hole could be sunk, as on a rocky place, then it was kept in position by extra beams lashed on as rails to the posts on either side of it, and by braces. In the illustration given of the Motu-o-Puhi *pa* (See Fig. **32**, p. 74) it is seen that one part of the stockade was evidently not sufficiently stable in the mud of the lake shore, hence the external braces shown in the sketch. A *pa* on a rocky site, where no great depth of soil obtained, had stockade defences only as a rule, and stays or struts were secured to the posts in order to strengthen the erection, and the stockade was sometimes built leaning inwards somewhat. Struts (*hokai*) were lashed to the rails and posts.

The *tokorangi* or trestle referred to above was a contrivance employed, not only in the erection of heavy posts of stockades and large houses, but also in lifting the ridge poles of smaller houses into position. In the latter task several of them were used. The heavy ridgepole of a large house was lifted by means of other contrivances.

OUTER DEFENCE OF A FORT.

It would appear that the outermost defence of a *pa* of olden times might be either a stockade, scarp, rampart or fosse. The extracts given from early writers, as also native accounts,

bear out this statement. Apparently the matter was decided by several circumstances, the contour of the ground, the presence of rock near the surface, or the decision of the consulting engineers of the clan. An elderly native informed the writer that, if the defenders of a place were numerous, then the outer defence would be a stockade, for plenty of men were available to man it and prevent its destruction by fire or other means. If not so numerous then an earthen rampart was constructed as an outer defence, for this would not be so liable to destruction. This rampart would have a fosse outside it, if the nature of the ground permitted of it, which was not always the case, as seen in ramparts formed round a hill face. It would also probably have a stockade on it, and a scarped face below it.

The old saying:—"*He umauma tangata, he umauma rakau*" was applied to a well fortified village with a strong body of defenders. This singular apothegm is capable of several renderings, owing to the double meaning of two of its component words. It might be given as "Human breasts and wooden breasts," referring to the fighting men and stockades. But *rakau* also means 'a weapon,' and *umauma tangata* is an archaic form, now obsolete, denoting a numerous folk, or many persons. Hence the hapless translator is in somewhat of a quandary. It might be rendered as 'numerous defenders and many weapons.'

Oblique Stockades and Elevated Screens.

We have seen that Cook describes the defences of a fort at Mercury Bay in which the outer defence was a stockade that leaned inwards over an interior fosse, the latter being 14 ft. deep and having a rampart 8 ft. high on its inner scarp brow, with another stockade on the rampart. We have also some notes, given below, on a raised outer screen that sloped inwards, as constructed among the folk of the East Coast. On the other hand we give some notes on a different form, in which the outer stockade leaned outwards; thus both forms must have been employed.

In *Maoria* by J. C. Johnstone is given a description of a native fort in which the following occurs:—"The outer defence was a ditch, a few feet in depth and width, at the inner edge of which stood a *chevaux de frise* of split trunks, succeeded by another ditch, upon the brink of which was built the real defence of the *pa*, a stockade of from 14 ft. to 16 ft. in height, etc." He also mentions a third and inner stockade. If, by *chevaux de frise* the writer means an outward leaning series of palisades, he is wrong in assuming that it was a common feature in native fortifications. He mentions no ramparts or scarps, and makes the trenches much too small for a pre-European fort. His description is that of a *pa tuwatawata*, which is but one of several types of the *pa maori*, and an inferior one. This writer also mentions the terraced hill forts. "Frequently seven and eight tiers of palisades rose, one above the other, upon the hills, which the natives with indomitable energy terraced and scarped with their wooden spades." His description of the tall carved posts is good —"....the tops carved into the most hideous and grotesque likenesses of men ever conceived by sculptor. The heads of the images were as large as their bodies, and their tongues, which were invariably thrust out of their mouths, were about the size of their forearms."

Hurae Puketapu, of the Wairoa district, Hawke's Bay, informed the writer that the *pekerangi* was the outermost stockade, an elevated one of which the posts only were set in the ground, the palisades being suspended as it were on the rails, as described elsewhere. He also states that this defensive work inclined inwards, and that it was employed in pre-European times. (Ko to waho he pekerangi, he mea whakatarewa ki runga te tuwatawata; ko nga himu anake i poua ki te whenua. Ko tena ingoa ko te pekerangi no mua iho ano, he mea whakahinga ki roto.) The word *rangi* enters into several names for elevated objects, such as scaffolds, platforms and elevated storage places.

An East Coast native account of a sloping stockade occasionally employed in former times is as follows:—The stockade was erected on the inner side of a trench so that the upper part of the stockade timbers just overhung the inner edge of the fosse. The base of the stockade

might be 10 ft. or 12 ft. from the fosse, the posts sunk about 6 ft. in the ground and standing perhaps 20 ft. above ground. Cross pieces of timber, termed *pae whenua,* might be placed in order to increase the bearing, one near the foot of the post, on the inner side, and one on the outer side (*i.e.,* on the fosse side) near the top of the post hole. These posts would be about 18 inches in diameter.

In some cases small stages or platforms, termed *paerangi* were attached to each post, each platform accommodating one or two men. In case of attack men armed with long spears occupied these coigns of vantage, and were well placed to prevent persons ascending the inner scarp of the fosse. The small platforms were placed about fifteen feet above the ground and about five feet below the summit of the post. In forming them two beams, each about 6 ft. in length, were secured to the post, one on either side in a horizontal position. Timbers were laid transversely across these beams and lashed thereto. These cross timbers were about three feet long, thus the platform was about 6 ft. by 3 ft. in size.

A *pa* with such a stockade and series of *paerangi* was known as a *koau māro,* in contradistinction to a *rahoraho,* or fort with vertical stockades. This description has not been corroborated and sounds somewhat doubtful.

We have already noted a remark by the Rev. W. Colenso, who came to New Zealand in the 'thirties' of last century, that 'sometimes the wooden fences were made to overhang a cliff or side of a hill as a *chevaux de frise,* presenting a low angle with the horizon.'

A common feature in native defences was a double fence or stockade, consisting of an outer screen or light stockade supplemented by a stronger stockade on the inner side, and near it. See Figs. **27-28-30**, pp. 65-68-70. The raised screen-like fence was, I believe, usually vertical, but in some cases, or among some tribes, it was inclined inwards at the top. This elevated screen does not appear to have been employed unaccompanied by the inner fence close to it, for the defenders would station themselves, not between the two, but behind the second fence. They thrust their long spears between the palisades of the inner stockade and under the outer raised fence, to lunge at the attackers. The bottom of the palisades of the outer screen were one foot to 18 inches from the ground. The space between the screen and the inner fence was about two to three feet. This double fence or stockade arrangement is sometimes referred to as an *aparua.*

Many natives have stated that this double stockade was a pre-European form of defence. The earlier writers do not seem to have noted it, it was probably an old usage, but not, perhaps, universal. When the outer and elevated palisading inclined inwards at the top, then it was secured at such an angle as to allow defenders stationed on an elevated platform inside the second stockade to lunge downward with their long spears on the outer side of the sloping barrier, and so to discourage assailants. At the same time other defenders might be stationed below and just inside the second stockade, who would thrust their long spears through the inner stockade and under the elevated outer one. Thus an assaulting force would have two series of spears to encounter when it attempted to destroy or scale the outer barrier. Fig. **27**, p. 65, illustrates the *aparua* mode of stockade defence, though the palisading is but light, as it formed part of a model of a stockaded village erected at the Christchurch Exhibition of 1906.

The following interesting notes were forwarded by Mr. Arthur Ormsby. They were contributed by Hari Hemara, of Maniapoto, and written out by W. B. who also contributed a sketch plan of the Arapae *pa,* near Te Kuiti. To these helpers I am much indebted. These notes apply to fortified places of the Waikato district:—"It should be premised that no two *pa* were alike, but, following a general plan of defensive outworks, each was fortified according to the site and its shape. Before work thereon was begun, the chiefs and experts viewed the site from every possible point of access and assault, noting its weak points, for which defences were so planned and contrived as to baffle an attacking force. The accompanying sketch shows the plan of Arapae *pa,* occupied in 1821, situated about

FIG. 27.—THE APARUA STYLE OF STOCKADE DEFENCE.

Model of a Stockaded Village at the Christchurch Exhibition of 1906. Represents a modern form with light fences, and a wide spaced *aparua* containing a trench in which musketeers would be stationed. See p. 64.

J. McDonald, Photo.

eleven miles from Te Kuiti. It was successfully defended against Te Atiawa and Ngapuhi.

"The term *ngutu* was here applied to a narrow entrance passage formed by an overlap of the defensive stockade, the *pekerangi,* and such entrance would be staged with an overhead platform, on which stones were stored to cast on an attacking force. Otherwise *waharoa* was the name generally applied to the main entrance passage.

"The taller posts, with a *tekoteko* or *whakapakoko* (image of human form) carved on their upper parts were known as *pou matua.* These were named as the carver and donor of the post thought most conducive to their *mana* and dignity. It might be given the name of an ancestor, or chief of a friendly clan. Te Rau-paraha named one after himself. Chiefs of note and famed warriors might be thus memorised.

"The palisades were called *wawa,* and the spaces between them *tiwatawata.* Through these spaces the long spears (*tao*) of the defenders were thrust. There was no standing room on the parapet to enable the attacking force to use such spears.

"The palisades of the outer stockade were so lashed to the rails that their lower ends were about eighteen inches above the surface of the ground. This was not only to tempt ingress there, in which case the defenders would have a great advantage, as an enemy endeavoured to crawl under, but it also often enabled the former to reach and drag inside the body of a slain or wounded enemy.

"The *wita* was simply a duplication of the outer palisading, but of lighter materials, about sixteen inches from the latter. Its palisades were so placed as to break or cover the spaces between the palisades of the stockade inside it. Such a double stockade defence is termed *aparua.* Palisades of an inner stockade were always inserted in the earth. Posts of stockades were of the most durable timbers, as *puriri, totara, maire,* etc., and to these were lashed the rails (*kaho* or *pae*).

"The first class *pa* had two moats, the *awamate* outside the stockades, and the *awarua* between the two main stockades.

"The *mianga* or latrine of a *pa* was, if possible, situated at some steep place or cliff brow. In many cases the stockade at such a place was so erected as to form a recess in which the latrine was constructed. It consisted merely of a beam attached horizontally to two posts, on which beam persons squatted with their backs to the stockade. At this place only would the palisades of this stockade be suspended instead of inserted in the earth."

The sketch shows a fortified area 20 chains long by 8 chains in width, protected by two moats and two stockades, one on either side of the inner moat, but with no stockade outside the outer fosse or moat. One end of the fortified area, whereat the main entrance is shown, has two *aparua* or double stockades marked, also the fighting stage over the entrance passage. A large *whare whakairo,* or carved house, is situated at the other end of the fort, while two rows of dwelling houses occupy the two sides of the enclosed area, the central part being open, the *marae* or plaza of the village. Two latrines are shown in two small extensions of the outer stockade.

The second stockade (*wita*), mentioned above as being of lighter material than the outer one, was, in many districts, constructed of stronger timbers.

Natives of the Wairarapa district state that, in their region, the raised outer screen was called a *karewa,* and that it was inclined outwards at the top. The term *matahao* also seems to have been applied to it. Both are descriptive names, the first implying elevation, while the second seems to denote something repelling yet enclosing, the palisades leaning over an attacking force. The second stockade was vertical and within that came the main stockade. This innermost stockade is variously known in other parts as *kiri-tangata, parā-kiri,* and *kiri-kaiahi.* Long and thick stems of *aka tokai* were used as rails for the *karewa,* and the palisades were lashed on with small stems of the same climber in a crossed method termed *tamanga,* a name that has a generic sound and is probably allied to *tamau,* to fasten or secure. This lashing was reeved or cinched at each palisade to prevent a release or loosening of

other palisades in the event of it being cut. It is said that, in this district, stockades were not erected on ramparts, nor was any stockade situated outside the outer fosse. The posts of the *karewa* leaned outwards and were deep sunk; the rails were lashed on the inner side of the posts, and the palisades on the inner side of the rails. The bottom ends of these palisades were raised about one foot above the surface of the ground, hence they were sometimes referred to as *pairi,* a word implying elevation or suspension. An upright raised screen was, in like manner, alluded to as a *tokotu.* Only the superior type of fortified places possessed this kind of defence, places permanently occupied, such as were styled *pa ukiuki,* while inferior places, such as were constructed near cultivations and at fishing camps, were classed as *pa kai hau.*

In Figs. **28** and **29**, p. 68 are seen the *aparua* or double stockade with elevated outer screen, and the *matahao* or oblique stockade inclined outwards. The latter form was employed on hill sides, sloping ground. The remains of such a stockade were seen by the writer on Somes Island in Wellington Harbour.

There was no defensive work outside the *karewa.* There might or might not be a secondary stockade between it and the main stockade, but if no raised screen was erected then a *wita* would certainly be constructed outside the main fence. Occasionally, according to an East Coast native the *pekerangi* was attached to the inner and main stockade by means of braces (*hokai*) placed in a slanting position with one end lashed to the upper part of the outer stockade and the lower end to the base of the main fence. This as a preventive in case of attempts to pull down the outer stockade or to undermine it and so cause it to fall. To cut the timbers of a stockade was usually deemed impracticable, the process being too lengthy a one with energetic defenders at hand.

Our late enthusiastic contributor, Tuta Nihoniho of Ngati-Porou, applied the term *wita* to the leaning outer screen, and stated that, in his district, it was so constructed as to incline inwards at the top so as to be connected with the inner fence. See Figs. **29**a-**30**, pp. 68-70. It is not assured that this was a pre-European usage, though Tuta considered it to have been so. And here it may be stated that no living man has seen the old style of *pa maori* with its many defences and devices, for the style of those defences underwent considerable change a century ago. Of their remains no person now living has seen more than the earthworks and a few stockade posts and palisades of the more durable timbers. Hence the difficulty in obtaining precise information as to old methods of defence and their names.

The *wita,* says Tuta, was not an upright stockade, but a sloping barrier, or screen outside the main fence. It could scarcely be termed an abattis, for it was inclined inwards at the top to the main stockade. Long, stout timbers, about six inches thick, had their lower ends sunk in the earth about four feet out from the main fence. These beams were about eighteen inches apart, and inclined inwards so that their tops rested on the upper rail of the main fence, a notch being cut in them so that they would fit over the rail, to which they were firmly lashed with the durable *aka* already mentioned. Horizontally across these beams were lashed two rails, the lower within, perhaps, two feet of the ground line. Palisades were then lashed on the rails, about three inches apart parallel to the slanting frame beams, *i.e.,* up and down, but these did not extend down to the ground line, they stopped short at the lower rail, thus leaving plenty of space to thrust spears through, indeed space was left between the palisades of all three fences for the passage of spears which found a support on the rails of the stockades, much as a long pliable bird spear is manipulated.

Tuta also states that the Puke-kiore *pa* at Waiapu had a wide and deep trench outside the *wita,* into which the long spears of defenders could be thrust. A rude drawbridge spanned this trench at the entrance to the fort, and this could be raised so as to serve as a gate barrier in times of danger. The defences included two ramparts or earthen walls and two *koruarua* or trenches. It does not appear certain, however, that the above method of blocking

FIG. 28.—THE APARUA SYSTEM OF STOCKADE DEFENCE HAVING A VERTICAL PEKERANGI OR ELEVATED OUTER SCREEN.
See pp. 64-67. *[Drawing by Ethel Richardson.*

FIG. 29.—THE MATAHAO FORM OF OBLIQUE STOCKADE.
This outward leaning outer stockade was employed in the defence of hill villages. Note that rails and palisades are, in Fig. 29, shown on the wrong side of posts.
See pp. 66-67. *[Drawing by Ethel Richardson.*

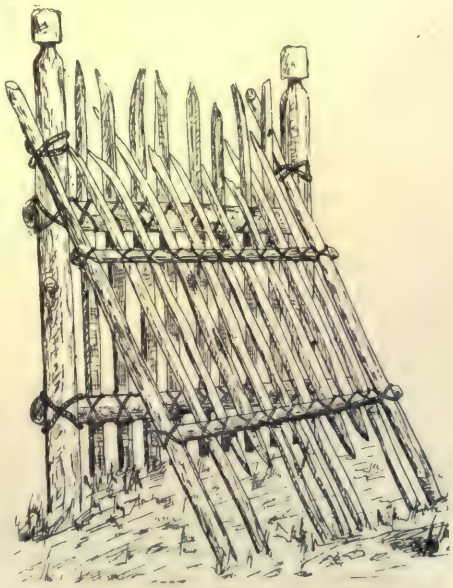


FIG. 29A.—THE WITA BARRIER.
See pp. 67-69.

a gateway was employed in pre-European times. The means of crossing a fosse usually consisted of one or two beams or stout poles.

This form of outer screen would act as a stay or strut to the inner stockade in case of an attempt being made to destroy the latter defence by means of using the *rou*, or hook and rope.

Again, Tuta remarked that in cases where the outer raised screen was vertical, it was termed an *aparua*. The timbers employed for such defences were *totara*, black *hinau*, heart of *pukatea* and *taiki kowhai*, the latter term denoting hard seasoned heart wood of *kowhai* from which all sapwood has decayed and sloughed off.

The innermost stockade, according to the same authority, was sometimes erected within a few feet of the main fence, but this looks like a modern method. It was much lower than the main fence and in some cases the upper ends of its palisades were pointed, so that an enemy scaling the main fence and attempting to jump therefrom, stood a goodly chance of being impaled upon these elongated caltrops. This peculiar arrangement may have been adopted in some modern cases, but does not appeal to us as an old usage.

No specific term for the spaces between stockades has been collected, though the term *wa patiki* is sometimes so applied. This appears to carry the generic sense of 'space' or 'interval,' and is applied to the spaces between the thwarts of a canoe, between cultivated plants in a garden, etc.

We have on record the statement of a native contributor to the effect that the raised outer screen is a modern usage, and that it was not employed in pre-European days; others say that it was an old form. Certainly the earlier writers do not mention it, though we know that it was much employed in later times, when firearms were commonly used. In late times defenders were almost concealed in a trench and fired under the screen.

Nor was the elevated screen an universal usage in the modern *pa*, for in some cases its palisades were inserted in the earth and forms of loopholes were used. Such apertures were termed *whakarua-kotare*.

Later notes from the Waiapu district show us that the upper part of the sloping *wita* barrier met the vertical stockade near the top. The suspended palisades of the outer screen were often not continuous, some continued down to the ground line, as shown in Fig. **29**a, p. 68. Spears were thrust through the open spaces. Such an outer defence resembles somewhat that of a *pa* at Mercury Bay described by Banks. Owing to the inward slope of the outer screen, defenders stationed on a stage inside the vertical stockade could thrust their spears downward outside the *wita*.

The following account of the construction of a *pa* at Miramar, Wellington, some 28 generations ago, has been preserved in Maori tradition. It was situated on the ridge above the spring in Worser Bay, and tradition states clearly that Miramar was at that time an island, its native name being Motu-kairangi. This is the best account of the construction of a fortified village met with in Maori tradition, hence it is included here. The name of this *pa* was Te Whetu-kairangi. The full story of this settlement has been published in vol. XXVI. of the *Journal of the Polynesian Society*.

The settlers came down from Te Mahia district under the leadership of an old chief named Whatonga, and his two sons Tara and Tautoki, the former intending to return northward when his sons and their followers were settled here. The migrants first settled on Somes Island (Matiu), where they built huts and then began to explore the district. Here we may take up the story as given in the translation:—

".....Then they went to examine the entrances of the ocean *and the large island between those two channels*, after which they returned to Matiu. When the month Ihonui [February] came, Whatonga addressed his sons and their respective followers:—"After I have returned, this island [Somes Island] will not be a suitable place as a permanent residence for you. Let this be a home for the women and children, and let the men proceed to the forest on the mainland to split timbers and obtain *aka* [stems of climb-

ing plants] wherewith to construct houses and defensive stockades. Erect a stockade and houses at the place where I thrust in my staff; let all that part be enclosed within the stock-

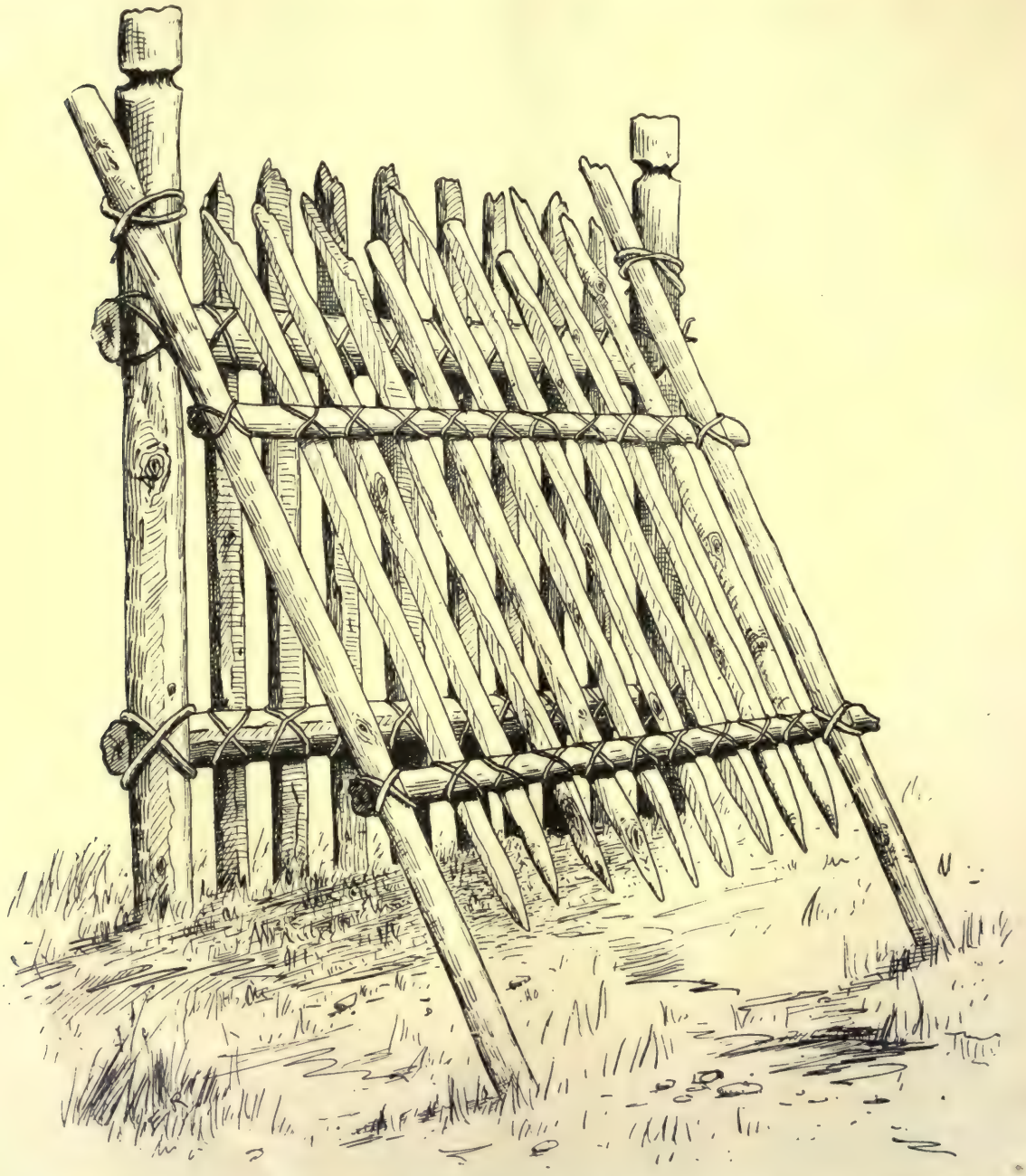


FIG. 30.—THE APARUA FORM OF OUTER DEFENCE, SHOWING THE WITA OR OBLIQUE ELEVATED SCREEN.

See pp. 31-64-67. *[Drawing by Ethel Richardson.*

ade. When the fortified village is completed, then render the water spring accessible in times of stress by means of erecting a stockade on either side of the path leading to it, adding an elevated outer stockade, lest it be cut off by a besieging force.

"Erect the stockades on the lines we marked with pegs, so that ample space may be enclosed. Let there be but one entrance to the main way into the fort, and see that that main way is stockaded on both sides. Construct two elevated platforms for defenders at the entrance to such way, also two where the passage enters the plaza of the village. There should indeed be three such stages on either side of the passage way. All posts of the stockade should be bulky ones, with but two palisades between them, so that an attacking force may be baffled.

"All parts of the island overgrown with *manuka*, fern and brush should be burned off each year that such growth is abundant, lest it be used by an enemy wherewith to burn the stockades when piled up against them, that is why you should keep the land clear of scrub.

"There should be three lines of stockades, one oblique line leaning outwards, one elevated screen stockade, and the main stockade, which is the innermost of such defences.

"Now bear in mind that this will be your exposed and accessible position, whereat the want of food will be sorely felt, for such will be the weapon for an enemy to use; they will invest the place in order to starve you, and so cause it to fall. Construct many storage places at the rear of your dwelling houses, as places wherein to store fish, dried *kumara* and *korau*, also shellfish, such as dried cockles, mussels and *paua* [*Haliotis*] to serve as reserve food supplies. Then, when enemies appear, you will possess goodly stores of food, including fern roots and dried berry kernels, the sustenance of your forbear Toi, and on account of which he was called 'the consumer of forest products.' [Toi Kai-rakau.]

"Your cultivation grounds situated near your village will cause no anxiety, for those working thereat will return to the village at night. But in regard to cultivations situated at a distance, you must erect secondary defensive works to protect them. There are two objects in constructing such outworks, the protection of the cultivations, and also the warning of the principal village when an enemy force is approaching.

"The stockaded village of one of you [brothers] should be constructed on the right [eastern] side of the eastern entrance, but the principal cultivations should be on the big island. The storehouses should be similar to those already described, and in similar situations, so that when an investing enemy sees no store houses, he will believe that a short siege will produce misery and suffering through lack of food. Even so the enemy will continue to invest the place, and you know that a long continuance of the siege will cause hunger to hustle him away. And if, at such a time, you are able to deliver an attack on your enemy at some part of his lines where it is not expected, then ere long that enemy will fall, enfeebled as he will be by lack of food.....I have spoken to you two in this manner so that each of your fortified positions may ever act as succourer of the others; when enemies attack one let the others come to its aid.

"Another task for you two is the seeking of a suitable place, unseen by travellers and difficult for a person to find, whereat to construct a refuge hamlet, in which to store such food supplies as keep well. Such a hamlet is called a *kainga punanga* and is intended to be unseen. At night only are food preparing fires kindled at such places, never in the day time, lest the smoke be seen curling upward. This *punanga* is for occupation when a fortified place falls, then survivors meet and dwell there. Or, when a hostile force is reported to be approaching, then the women, old folks and children retire at once to that place and remain there, so that the fort be left clear for the fighting men, that they may not be hampered by non-combatants. Follow my advice and no enemy will defeat you."

"Here Tautoki, one of the sons of Whatonga, interposed:—"The isles [Somes and Ward] would be suitable places to serve as refuges for the old folk, women and children." Whatonga replied:—"Not so; the weakness of that plan is that an enemy would see that the non-combatants were living there, whereupon they would leave the bulk of their forces to invest the fortified village and others would go and capture the islands."

Here end the instructions of Whatonga as to the construction of the fortified village, the secondary forts or outworks, and the refuge. Here follow such parts of the tradition as deal with the fort building:—

"Let my discourse return to Tara and his brother, as also to their people. They busied themselves in procuring material, some in rafting timbers, some in felling trees, others in cutting the logs into certain lengths, others in splitting, others in hewing, others in conveying the timbers to the bank of the river called Heretaunga [the Hutt river], whence they were rafted across to the other side of the Whanga nui a Tara.

"The difficult part of their labours was the preparing of the timbers. The length of the secondary [or intermediate] posts of Te Whetu-kairangi was three fathoms, while the palisades were two fathoms in length. The secondary posts, also the palisades, were sunk one *hau* [half fathom] in the ground. There were four rails lashed to the uprights with *aka* [stems of climbing plants]. The main posts of the stockade were five fathoms in length and one fathom in circumference, the secondary posts being half a fathom in girth. The palisades inserted between the posts were similar to those of present day stockades. Now you can perceive the magnitude of the task [as performed with stone age appliances], and the weight of those timbers, as also the labour of floating them from the place at which they were prepared to the opposite side of the Great Harbour of Tara. The refuge hamlet prepared as a dwelling place for women, old men, and children, when seeking refuge from a stricken field or captured village, was located at Takapau-rangi, at the head of Wainui-o-mata.

"Well, the main fortified place was built, and, when finished, houses were erected within it. There were two well fitted and framed houses among them, one of which was named Raukawa, after the sea that separates the two islands [Cook Straits]; this house belonged to Tautoki. The other superior house was named Whareangi, in remembrance of the place where the sacred Wharekura was situated in the old time fatherland. The fortified village was named Whetu-kairangi."

With regard to the expression *punanga*, denoting a refuge, the late Major Large informed me that, in the Cook Islands, the name denotes a stronghold.

The mention of the *pekerangi* or elevated outer screen as an extra defence for the passage to the water supply, points to such defence as being a pre-European usage. The positions of the three stockades are unfortunately not explained. If the outer stockade was a *matahao*, that is to say oblique, leaning outward, it is not clear as to how the elevated *pekerangi* stood in relation to it. Possibly the second defence was the outward leaning stockade, in which case its upper part would overhang the *pekerangi*.

General Remarks on Stockades.

In the illustrations given of the Motu-o-Puhi *pa* in Figs. **31** and **32**, pp. 73-74, we see a somewhat inferior *pa tuwatawata* or stockade, showing no earthworks. This place is a point projecting out into Roto-aira (lake), Taupo district. It is connected with the mainland by a strip of low wet land, hence no trench is seen. It was visited and sketched by G. F. Angas in the fifth decade of last century, at a time when the place was being re-stockaded to serve as a refuge, on account of warlike rumours, hence the few huts seen. Three stockades are shown in Fig. **32**, p. 74, the outermost extending across the neck of low lying land connecting the small hill with the mainland. This is a single line and extends round the edge of the lake as far as a steep bluff, being braced at that end by struts on its outer side. No stockade shows any of the superior, tall carved posts. Secondary posts are numerous and close together in the outer stockade. All rails are depicted as being outside the posts. This may have been so, but it is against the verdict of some of our best native authorities. Possibly the procedure was changed by the gun fighters of modern times. The carrying of rails across the entrance passage would be with a view to barring them more effectively and

FIG. 31.—THE MOTU-O-PUHI PA, AT ROTO-A-IRA, AS SEEN BY ANGAS IN THE FORTIES OF LAST CENTURY
[*Drawing by J. McDonald after Angas.*
See p. 72.

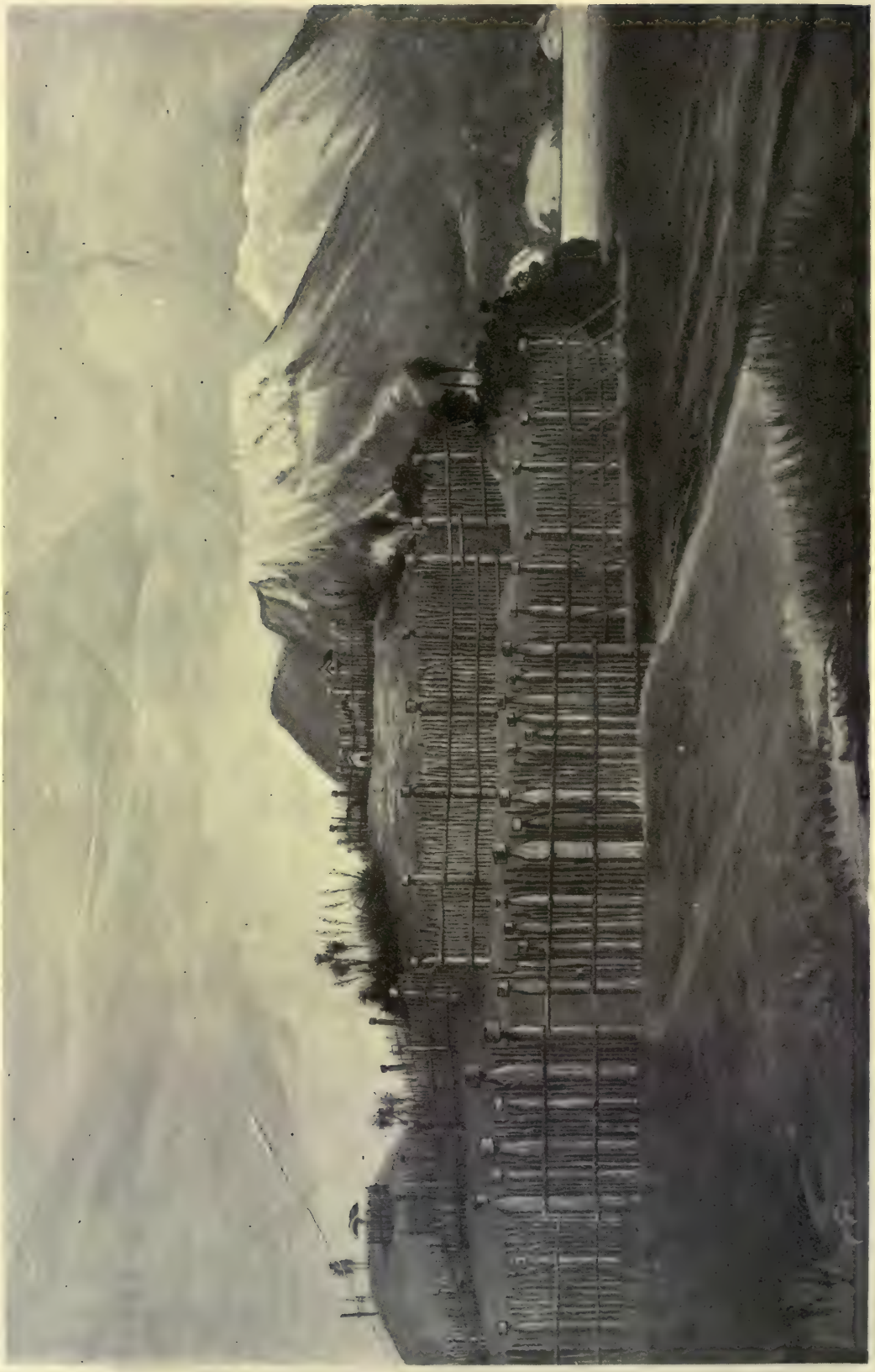


FIG. 32.—ANOTHER VIEW OF MOTU-O-PUHI AT ROTO-A-IRA.
See pp. 62-72.

[*Drawing by J. McDonald after Angas.*

quickly. There is no sign of a *ngutu* or fenced lane-like entrance passage, and presumably the work of defence was not completed when the sketches were made. In Fig. **31**, p. 73, the main entrance is seen.

Missionary Wade gives some account of stockades in his little work of 1842:—"The defence of the fort is formed by two and even three stout stockades of irregularly sized poles and posts, varying from eight to thirty feet in height from the ground, in which they are thrust from three to seven feet. The large poles [posts] are placed about a dozen feet apart, on which are often carved representations of men and animals. The spaces between the poles are filled in with stakes close together, and bound firmly to horizontal pieces by a creeper called *torotoro* which is tough and serviceable for a long period.....Few instances have perhaps occurred of a *pa* being taken by a brisk siege.....The stockades that enclose the fort are within a few feet of each other, the outer gate or entrance being much less than the inner opening, which in time of war is entered by stepping stones or small wooden posts like a turnstile. The width is so contracted as scarcely to admit a large sized man, and between the fences a fosse is often cut about four feet in depth, sheltering the besieged when defending the place.....Mounds have often been erected during the night by an enemy to overlook the interior of the fort, but they are of rare occurrence. The rush huts near the stockade are covered with earth and clay."

It is somewhat confusing to note that the mounds *often* erected are of *rare* occurrence. This place was evidently built to be defended with guns, hence the shallowness of the trench. The carved representations of animals is quite an unknown feature, such things were unknown in the old *pa maori*, nor have we heard of any other such case in respect to a modern fort. The only quadrupeds known to the Maori in pre-European times were the dog and rat. The remarks on the entrance to a *pa* are worthy of note. The covering of hut roofs with earth was done to prevent them being burned by an attacking force.

The following extract from the Rev. R. Taylor's work *Te Ika a Maui* refers to a well known native custom:—"When a great chief entered a *pa*, if the people wished to treat him with distinction, they would not suffer him to enter by the gate, but pulled down a portion of the fortifications for him to pass through."

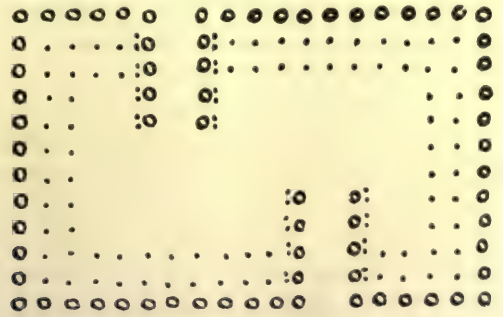


FIG. 33.—DESIGN OF SMALL MODEL OF A STOCKADED VILLAGE SHOWING THREE LINES OF DEFENCE AND TWO ENTRANCE PASSAGES.

In describing an old time village site that had been exposed by the agency of wind in removing a sand hill by which it had been covered for many generations apparently, Capt. G. Mair writes*:—"Not the least interesting of my discoveries was finding the tiny model of an ancient *pa tiwatawata*, or palisaded fort, which had evidently been a plaything of the village children. It had been made by sticking three rows of *totara* splinters into the ground, forming the three lines of defence known as the *pekerangi, kaikirikiri* and *kiri tangata*.

*See *Transactions of the N.Z. Institute*, vol. 35, p. 241.

There were two gateways approached by long alleyways. The model was of this shape (See Fig. **33**, p. 75) and about six feet by four feet."

G. F. Angas, travelling in the Mokau district in 1844, wrote as follows:—"Near the path I observed a miniature *pa,* constructed by the boys, who amuse themselves by building tiny fortifications, and emulate the courage and skill of their sires in the sport of besieging and defending them. The mounds [ramparts] were made by heaps of earth and the fencework constructed of upright sticks, displaying the characteristic ingenuity of the Maori children."

Of a *pa* at Te One-poto, Wai-kare Moana, seen by him in 1841, Mr. Colenso writes:—"Passing on, we soon arrived at the village of Te One-poto, situated on a high headland jutting into the north side of the lake. The gateway was, as is often the case, embellished with a pair of huge and boldly carved human figures, besmeared with shining red pigment, armed with spears, and grinning defiance to all comers. These were not only seen to advantage through being elevated above the horizon, but their eyes, or rather sockets, instead of being set with glittering *Haliotis* shell, according to the usual national custom, were left open, so that the light of the sky streamed through them, and this was yet more particularly manifested owing to the proper inclination given to the figures, looking down, as it were, on all toiling up the narrow, steep ascent into the well fenced village."

Te One-poto is not on the north side of the lake, but the Matuahu *pa* was on that side.

Of the Pukawa *pa* at Taupo, in 1859, Hochstetter says:—"It is situated upon a peninsular projection into the lake, with an enclosure of strong palisades, through which two sliding gates gave admittance." This writer also speaks of the Motu-tere *pa* at Taupo as being 'situated upon a low neck of land jutting far out into the lake, and surrounded by a row of palisades of stout posts bearing carved figures.'

The following account of a fortified native village by the Rev. Mr. Yate in *An Account of New Zealand,* 1835, gives a good idea of the *pa maori* in its transition stage, after the acquisition of firearms had wrought some changes therein, but prior to the more modern type constructed when fighting Europeans in the 'sixties' of last century:—

"A *pa,* or native fortification, is a place in which the natives of single tribes, or of various tribes, when living near each other and on friendly terms, assemble in times of war, and secure themselves, their wives, their children, and their slaves, from the attacks of the enemy. The site is generally chosen by the side of a river, or on the top of a high table hill; from whence water may be obtained without much difficulty, or without danger of annoyance from without. Some of these fortifications have cost immense labour, and are remarkably strong; having a double fence on each assailable side, of such dimensions, and put together with so much care, as to render them impregnable to an enemy armed only with muskets, provided the besieged have a sufficient supply of the same instruments of warfare. The inner fence is from twenty to thirty feet in height, formed of large poles and stakes tightly knotted or woven together with *torotoro,* the fibrous roots of a plant which abounds in the woods; or rather a creeper, climbing to the tops of the highest trees..... About every six feet, an image of the most frightful description, and carved with much art, is placed, with a *patu,* a native weapon, in his hand, in a threatening posture, grinning at the enemy, to scare him away. At a distance of about sixty feet are little square projections, with port holes, for resting the muskets in; from whence a sweeping fire may be kept up, to the great annoyance and destruction of the besiegers. The outer fence is much more fragile in its materials, but firmly tied; and is intended to keep the enemy in play, and from making a hasty breach in the inner wall; besides which, it materially breaks the force of the fire, and shields the besieged whilst taking aim from within. Should the outer bulwarks be taken, which could only be accomplished by means of hatchets, there would still remain the inner and more secure one to be mastered; which, as it could not be accomplished without much labour, would expose the besiegers to the fury of the party within. I have known them keep up a siege for five or six months, and return without having accom-

plished any thing, and with the loss of many of their people; either for want of supplies, or from the bravery of the *pa*.

"The interior of these fortifications may be denominated a city; the houses in them are generally arranged in squares, in which reside the chiefs, their slaves, their wives, and their families. The only egress, in time of war, is through small loop-holes, which a full grown man has great difficulty in creeping through, and which are confined to the outer fence, the inner one having sliding doors, formed out of a solid piece of wood, secured with bolts and bars, and opened one at a time, and only in cases of necessity. It is evident that, should the enemy attempt to creep through the loop-holes of the outer fence, in order to assail the inner barrier, he would present his forehead to the fire from within, and would ensure his own destruction. He would, moreover, find a number of the besieged lying in ambush, and ready to receive him in the ditch which separates the two fences one from the other, and which has been dug for the purpose of squatting down in, to fire from, without being exposed to the balls directed at the *pa*. So long as the people of the *pa* agree among themselves, are vigilant, and are not cowed (which frequently is the case by the name of some great conqueror), they may consider themselves secure; and, should their supplies hold out, they would be able, for any length of time, to resist, or keep at bay, a force much superior to their own. This is especially the case when the ground on which the *pa* stands is elevated, a situation always chosen if circumstances permit of it.

"Some *pa*, that is those which are naturally strong and have excellent means of defence within themselves, have only one enclosure, and that of a very slight character; but, slender as it is, it appears abundantly sufficient to answer every purpose of keeping off an enemy, on account of the disadvantageous post which they, being on so much lower or on such slanting or precipitous ground, or in the water, must necessarily occupy. I have seen one *pa*, that of Mawe, which of itself is almost impregnable. It is a promontory, jutting out nearly a quarter of a mile into the lake; and is only approachable by canoes, except through a narrow defile, cut through a neck of land which joins it to the main, and which alone prevents it from being an island.....This forted eminence was chosen and prepared by Hongi, when he expected to be attacked by some hostile tribes. The arrangement of the portholes in the embankments, and the general way in which it is fortified, shows the genius and, in the opinion of military men, the military skill of this renowned chief.

"Some of the native *pa* are fortified with earth: the hill is levelled perpendicularly from the summit, to about the depth of ten yards, and precludes the possibility of any person's climbing up without great difficulty. To preserve the inhabitants from the missile weapons of the besiegers, walls of turf and clay are built up about three feet above the surface; behind which they lie secure, till the place is taken. These fortifications are mostly found in the northern parts of the island, have a very imposing appearance, and are doubtless much more desirable as a defence than any which can be erected of wood; that is to say with the means which the New Zealanders now possess. The walls are of such a thickness that no musket ball can penetrate."

In this account we note that the outer stockade was a light screen, but there is no hint as to its being a raised one. The description of the small entrance holes through the stockades, as used in war time, is excellent. The final paragraph refers to the terraced hill forts of the north, a very different defensive system. The low earthen walls mentioned were, presumably, parapets along the brows of the terraces, probably constructed after the acquisition of firearms. In terraced hill forts one very seldom sees any remains of earthworks on the terraces.

In connection with the fact that forest dwelling clans relied on fortified positions to a much less extent that those dwelling in open country, the following remark was made to the writer by Tama-i-koha, a savage old gentleman of the Tuhoe bushmen: He said:—"I

did not relish sitting in a *pa*, I preferred to go out and fight in the forest. The ravines and cañons were my trenches, the boulders of the mountain streams my palisades."

Fighting Stages or Platforms (Puhara, Puwhara, Pourewa).

These were high platforms erected within the defences of a fortified village, and on which a number of the defenders stationed themselves during an attack on the place. Their principal use seems to have been the defence of the entrance and any weak place in the defences of a fort, hence in most cases they were erected opposite the gateway, and, being lofty stages, the defenders thereon were able to use their long spears to advantage in lunging down at any of the attackers who attempted to enter by the gateway. Numbers of stones were usually kept piled on these stages—no mean weapons when used under such circumstances among a people whose missile weapons were few and of an inferior type. These stages are usually termed *puhara* and *puwhara*. A native of the Taumaru-nui district applied the name *purangi* to them.

The *puhara* was often erected against the inner side of the palisading at the entrance of the *pa* or fort, but, in the hill or promontory forts, might be placed on a terrace above the level of the entrance, which, however, could be reached by the long spears of the defenders on the stage. Some of these thrusting-spears were as much as 20 ft. in length. From these high stages, stones could be used against an attacking force with, literally, crushing effect.

Williams gives *pourewa* as the name of "an elevated platform attached to the stockade of a *pa* (fort)." In one version of the legend of Hine-moa the terms *pourewa* and *atamira* are both applied to the platform erected by Tutanekai at Kai-weka, on Mokoia Isle, which platform was apparently such as that termed *tapurangi* by the Tuhoe folk. The fact is that *whata, atamira, pourewa,* and a few other names are practically generic terms for raised platforms, and are applied to such erections of different sizes and forms that were used for divers purposes.

Crozet describes the fighting-stages seen by him in forts of the Bay of Islands district in 1772: "Inside the village, at the side of the gate, there is a sort of timber platform about 25 ft. high, the posts being about 18 in. to 20 in. in diameter and sunk solidly in the ground. The people climb on to this sort of advance post by means of a post with footsteps cut into it. A considerable collection of stones and short javelins is always kept up there, and when they fear an attack they picket the sentinels there. The platforms are roomy enough to hold fifteen or twenty fighting-men."

It was the custom in troublous times to station a watchman on one of these stages during the hours of darkness. His duties were to act as a sentinel, and in many cases a wooden gong was kept suspended between two posts on the platform, which was struck at intervals by the watchman. The sound of this gong, and of the watch-songs sung by the sentinel, warned both foes and friends that the watch was on the alert.

A kind of overhanging stage or platform, termed *kotaretare,* was sometimes erected in a *pa* or fortified place so as to project over the palisades for some distance. In some cases such erections seem to have been utilised for the purpose of defending the entrance to the fort. At the siege of Operiki, on the Whanganui River, such a platform was built by placing long poles so as to rest on the stockade and project outside the defences. A platform was then constructed by lashing on cross-pieces of timber. This was for the purpose of enabling the defenders to attack a party of their assailants, who advanced to attack the defences under cover of a huge shield (called a *rangi* or *taiki*) made of *kareao* (a tough climbing plant, the supplejack, *Rhipogonum scandens*).

Of the Taranaki district Mr. W. H. Skinner says, "In many *pa*, more particularly those situated in more or less flat country, there was a high tower of wood erected near the main entrance, called a *taumaihi,* from which the watchman could observe the approach of any

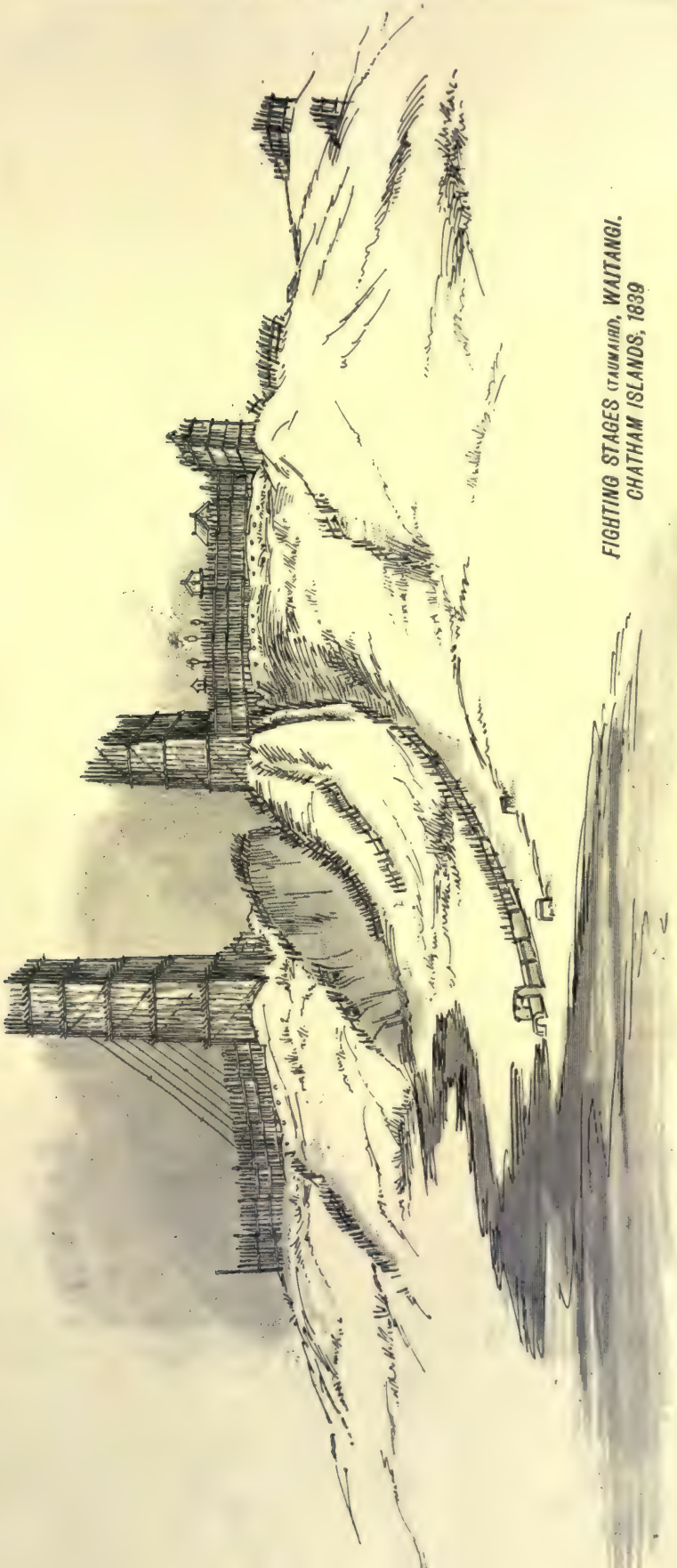


FIG. 34.—LOFTY FIGHTING STAGES ERECTED AT THE CHATHAM ISLES BY MUSKET ARMED MAORI RAIDERS. [*After Heaphy.*

See pp. 80-304.

one. These towers had two or three, sometimes more, stories floored with poles, and large quantities of stones were stored in them to cast down on an enemy.'' The term *taumaihi,* as a name for a stage, or scaffolding, or tower, seems to be confined to a part of the west coast of the North Island.

When the Tauranga-ika *pa* was attacked by the Colonial forces in 1869, the enemy had lookout platforms erected in tree-tops on the south side of, and away from, the *pa* (fort).

Square towers, made of timber and containing several stories, are depicted by Heaphy as seen by him at the Chatham Islands, where two parties of Maoris, each in its own fortified place, were at war. The two forts or stockades were near each other, and each party tried to command the *pa* of the other by erecting a high platform from which to fire down into the enemy's quarters. Hence each party built floor after floor in the race skyward. However, such erections would not have been made prior to the introduction of firearms. See Fig. **34**, p. 79.

In some of the native fortified places there was a special stage or elevated platform used as a watch-tower, and on which the *pahu* or wooden gong was suspended between two upright posts. The watchman's duties included the striking of this crude instrument at intervals. In other places the gong and watchman occupied one of the *puhara* or defensive platforms, as described above.

Dr. Marshall describes a form of projecting stage, as seen by him at Te Namu *pa,* Opunake, in 1834*: ''Over the only two sides [of the *pa* or fort] by which it was practicable to escalade their fortress the inmates had raised projecting stages, from the front of which an inclined plane had been carried, serving as a breastwork for the defenders, and helping materially to repel their assailants; one of the means of doing which seems to have been by hurling huge stones, here collected in heaps as if in readiness for such employment, from these stages upon the heads of their enemies.....These stages were called *popatos,* the meaning of which term I have been unable to ascertain.'' This name is an error for *papatu,* a screen for defensive purposes, a bulwark (see *Williams' Maori Dictionary*), which was applied to the sheltering breastwork erected on the stage. Tuta Nihoniho informs us that the *papatu* is a breastwork for defence constructed on *puhara,* to defend men thereon from weapons of an attacking force. It was often made of wooden slabs.

Wakefield, in his *Adventure in New Zealand,* when describing the Hikurangi *pa,* above Operiki, on the Whanga-nui, remarks, ''On a level point which slopes gradually down to a sudden bend in the river is situated the *pa* with its double fence and fighting-stages towards the river, and a perpendicular descent towards that reach of it in which the island lies.''

All platforms have their uses, and the following item illustrates one of the most unusual thereof. It is culled from an account of the fighting in the Taranaki district in the 'sixties,' said to have been given by one of our friends, the enemy (see *Defenders of New Zealand,* p. 540):—''McDonnell now erected a platform at Waihi 40 ft. high; and when the surveyors were sent to survey the banks of the Wai-ngongoro River, where the scrub was high and good for ambuscades, the prisoners were told off to do sentry-go on the top of this platform, and told to keep a good look-out for us, and report if they saw any danger, but that if the survey party got fired into, that they would be at once hanged. We knew McDonnell's men would obey him gladly, so we did not interfere any more with the surveyors, lest our relations should be hanged by McDonnell's men.''

It is of interest to note that the fortified places of the Tongan Isles, called *koro,* had fighting stages with bulwark protections, erected over the entrances, as also at other parts, and that something similar obtained in the Fiji Group.

The fighting stages of fortified villages of the Port Moresby district, New Guinea, resembled the projecting *kotaretare* form of the Maori. Prof. Haddon tells us that they were

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*See *Personal Narrative of Two Visits to New Zealand 1836.* (p. 171.)

not level, but sloped upward, and this was also a Maori usage occasionally practised; in other cases they were horizontal platforms.

We have seen that these elevated platforms are termed *taumaihi* in the Taranaki district. Cook, Banks and Crozet do not make any mention of a breastwork to these platforms, an adjunct that does not seem to be mentioned by early writers save in reference to post-European forts. Some of our native friends state that the *papatu* or breastwork, a projecting wall like a fence on the outer side of the stage, was used in pre-gun days as a protection from stones, etc. It was sometimes alluded to as a *pātū* (both vowels long), or screen. Williams gives *kotaretare* and *kahekoheko* as names of such stages or elevated platforms in *pa* as projected outward over the stockade. In some districts the posts supporting a *puhara* are said to have occasionally been adorned with carving. The *puwhara* or *puhara* was a stage that did not project outside the stockade. When the stage was confined to the inner side of the stockade, then it seems to have been about three feet below the level of the stockade, so that the upper part of the latter served as a *papatu* or breastwork for the defenders. But the *kotaretare* form of stage projected out over the top of the stockade, hence the breastwork on it was a special structure. See Fig. **35**.

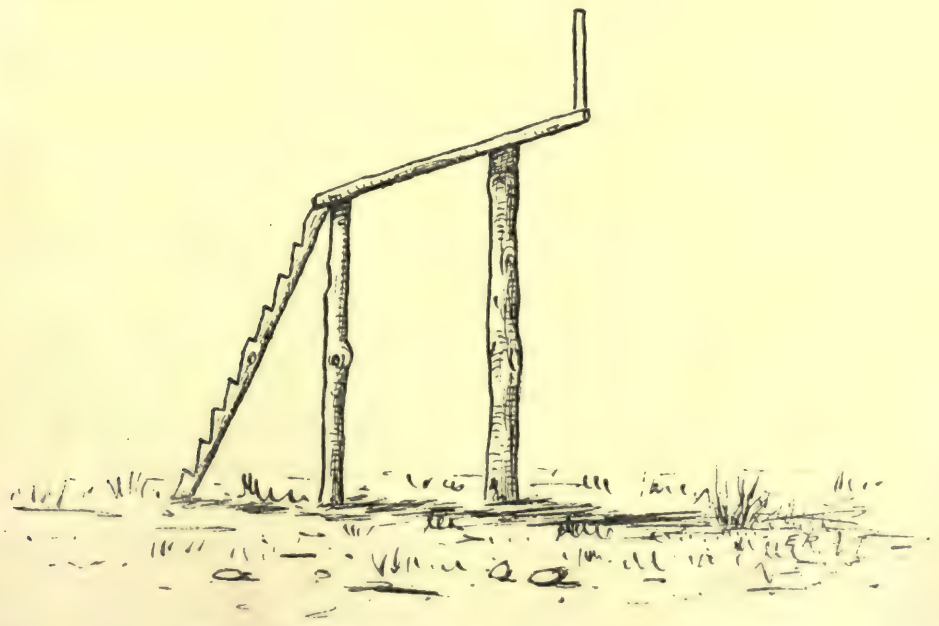

FIG. 35.—THE KOTARETARE FORM OF FIGHTING STAGE.

A peculiar form projecting out over the stockade and sloping upward toward the outer part. This form was also employed in New Guinea. The taller post represents part of the defensive stockade.

[*Drawing by Ethel Richardson.*

In his paper entitled *Early History of Rangitikei,* published in vol. 42 of the *Transactions of the N.Z. Institute,* Mr. Downes mentions an island *pa* that formerly existed in the Awamate lake or lagoon, at Parewa-nui, Rangitikei district, and adds, "When the writer first saw it, many years ago, the island referred to had a peculiar appearance, owing to a number of trees standing with their roots uppermost, the remains of ancient fortifications [? stages], called *puwhara,* upon which platforms were built. The same thing was noticed at other places when we were children, but not to the same extent."

Puwhara or fighting stages with more than one floor, one over the other, do not seem to have been known in pre-European times in most districts, but it is said that a form known as *taranga* was occasionally employed. This was a form in which the platform was con-

structed in two or three sections, at different levels, so that the whole was like a series of steps. In contradistinction to the *taranga* style of stage, a 'single decker' was called an *ahurangi*.

Notes on Fighting Stages Contributed by the late Tuta Nihoniho of the Ngati-Porou Tribe of the East Coast.

There was usually a *puhara*, or fighting stage erected so that men stationed thereon might defend the entrance to a *pa*. It extended from an inner stockade to the main one, and sometimes projected out over the latter; it was built on stout posts higher than the secondary posts of the main stockade, the floor of the stage being on a level with the top of such secondary posts. Access to these stages was by means of notched timbers, stout saplings.

There were often several of such stages in a *pa*. Some were of considerable size, as many as twenty men being able to operate from a large one. In some cases a stage was built on both sides of the entrance passage, sometimes on one side only, and at others immediately over it. If the attacking force managed to force the stockade barriers and enter the ditch, the garrison manned the earth wall, their principal efforts being directed to the defence of the passage through or under it.

The posts supporting the stage were stalwart tree trunks, forked at the tops for the reception of the horizontal beams which supported the flooring. These posts were often inclined inwards a little, in order to prevent any spreading.

Occasionally an attacking force would erect elevated platforms near the *pa*, from which to cast stones and sling spears.

In a terraced hill fort, such stages were sometimes erected so as to command places whereat an enemy might possibly gain access to the place, the weak parts of the defences.

Flanking angles, as such, were not added to the pre-European *pa*, though, in the case of hill forts, there were often projections of the defences of various forms, owing to the configuration of the ground. In some cases, however, a *puhara* or stage was erected outside but against the stockade in order that men stationed on it might defend some weak place in the defences. There was no earthwork or stockade round these projecting stages, nothing but the platform, with its bulwark, elevated on posts, access to which could only be gained from the interior of the fortified area.

A watchman might be stationed on one of these stages, or on the top of the earthwork defence. He might occasionally stroll round the defences, along the top of the parapet or along the ditch. In a large *pa*, when an attack was feared, there might be as many as four watchmen, stationed at different places. Sometimes a man kept watch throughout the whole night, or he might be relieved by another during the night. Persons might volunteer for such a task, or a chief might tell off a man as watchman for the night. Noted warriors were usually the most willing to act as watchmen, the strenuous fighters being the best of sentries. The alert fighting man, sayeth our informant, never slept soundly, he was ever wakeful.

It seems fairly clear that, on the whole, the Maori people, when dwelling in their fortified places, were not very systematic and careful in their look-out duties. In many cases they were inconsistent, from our point of view. An occupied *pa* might neglect watch duties at night for some time, and then, because some person had a portentous dream, it would be resolved to appoint a watchman, lest disaster wait upon neglect of the warning. Among an undisciplined people such a desultory manner of safeguarding a community would naturally obtain, more especially among those possessed of the peculiar characteristics of the Maori people. The Maori night watchman, like those of India, had no faith in such sentiments as 'silence is golden.'

Watch Songs.

The following are specimens of the old time watch songs employed by the Maori folk:—

"Tukua mai Kopu kia morunga, kia moraro
Kia whakatakataka ko te manu nui na Rua
Ka tutu te heihei, ka roki te tai e whatiwhati
Ka rere whakaaitu ki te po
Ka takahia te wai korire
Te niho o te kuri. Moi! Au!
Ka hei tahau, ka hei tahei e te tete
Nau ka whakaoho i te moe
Ka potapota rikiriki te kiri o te tangata
Koia ka katea i te ara tua, i te ara kino
Tangaroa whiti tua, whiti aro
Ko te tohe rere o te mahanga
Ka toremi, toremi
Whakatoremitia te taumanu waka taua o Hika-uhia
Ka toeke te paua mata konokono no runga no Kuao
E hara i te mango o uru
Ko te awhe iti ki makohakoha
Ko te Huihui o Matariki te ngakau kawe ke
Kiina mata wharenga, a kiina mata wharenga
Kiina mata wharenga
Te kai patu kohuru a to tipuna
Nana i tiki mai whakahi, hi, hi, hihiwa!
Taka te kohanga rua tupapaku
Parearau ki te wairau o to ure
E ruru, E koukou!
I haramai ra ruru i rawahi i Otama-kanohi
Kaore iara ko ruru pakau; pakia ki tua, pa!
Pakia ki taha, pa!
Papa pakihikihi ana te wai o taku hika
Kai ki te wheki ra, pa!"

(This weird chant is a very old one, and the natives cannot now give any explanation of its meaning. It is therefore untranslatable.)

The following watch song is a well known one among the Tuhoe and adjacent tribes:—

"Kia hiwa ra, kia hiwa ra.
Kia hiwa ra tera tuku;
Kia hiwa ra tenei tuku;
Kia hiwa ra.
He taua iara koua hopukia
Kai waho kai te tātā;
E kimi ana, e rapa ana.
Ina koia, e te iwi, e!
E ara, e!"

(Be watchful, be alert. Be on the alert in yonder terrace; be alert in this terrace. O be watchful. Enemies have been detected at the outer stockade, seeking and searching. Here they truly are. O people. Awake!)

The following is another old watch song from the same district, and was dictated by Toki Wharetapu of Tuhoe:—

"Kai Tuhua pea, kai Orona pea, kai Tokorangi pea
Ka rato te puke i hapa (?)
He kore tangata ki tua ki te maro o Tamatea
Te uhia, te rawea, te mau mai
Ka tokomaha ki a Te Werawera
I tona pa i a Tapu-te-rangi
Nana ka tuwherawhera atu ona taramata
E--e--i--a!

Moe tu, moe araara, moe tu, moe araara
Ka tangi te manu ki te pae
Ko heri, ko hera, ka taka mai i runga, ka taka mai i raro
Ka taka mai te rangi nui e tu nei
Kia hiwa, kia hiwa ra
Kei whakapurua mai au
Whakapuru tonu, whakapuru tonu te tai ki Heriheri
E kaore iara e titiro ana, e matai ana
Ki nga hunga ki nga kokonga ra o Matariki
E ko-koia, e ara e!
He taua iara kua hopukia kai waho
E kimi ana, e rapa ana
Inei koia iara te taua-e-e-i-a!"

Tuhua and Orona are the names of two old hill forts of the Upokorehe folk; Tokorangi and Puhirake were also strongholds of those people. Tuhua is situated on a hill top on the left bank of the Wai-o-tahe stream, inland of Ohiwa. Orona is on a spur near and south of Tuhua; the Waiwhero creek runs between them. Opposite Orona, on the right bank of the Wai-o-tahe, is the Waka-taua native village, and on the hill above it is the old Tokorangi fort. The Puhirake *pa* is on Mr. Chapman's farm, lower down the valley, right bank of the Wai-o-tahe.

We are told that a number of these songs contain statements that an enemy force is at hand and has been seen, or that such a force is addressed and asked as to what tribe it belongs. Also that, occasionally, the principal man of an approaching force, or one awaiting dawn to deliver an attack, would call out his name, scorning all concealment of his identity.

A short form of the above *mataara* chant seems to have also been employed, it is as follows:—

"Kai Tuhua pea, kai Orona pea
He kore tangata ki tua ki te Kope o Tamatea.
Te hurua, te rawea, te tau mai-e-e-e-i-a!"

The following is yet another watch song or *whakaaraara pa*:—

"Piki mai ra, kake mai ra
I nga pikitanga ki Pari-maukuuku
Ka titiro iho, ka rarapa ake
Ki te kopua wai hinu
Māna ano ka koukou ki te wai
Kia pai ai koe te haere ki te taua
I nei koia e te taua-e-e-i-a!"

Here follows another *whakaaraara pa,* or watch song:—

"Titi mai te marama, titi mai te marama
Na tara tuturu, na tare tetehi, na tara hokaia
Kihai au i panapana, kihai koe i panapana
Tau atu ko tawhiti.
Ka tu kapiti nuku, ka tu kapiti rangi
Waiho te tai o matuku
E moe ana te mata hi tuna
E ara ana te mata hi taua
E..e..e..ia!"

The following is a watch song used on the East Coast:—

"Ko hinamoki anake te kiore e whakakoko haere nei i te roro o toku whare. Ko, ko, kokoia, e tu e! Ko, ko, kokoia e rongo tangata keka. Tahuri rawa ki tua ki Waikari, ka hoki mai ai i te riri—E..e..e-i-a!"

Another watch song:—

"Kai te whetu whero
Kai te marama whiti rua e aio
Ka haramai nga wahine, ka kopeka
Ka haramai nga tane, ka kopeka
Nga wahine ngutu oriori
Nana te whakatomo ki roto o Waikato rua
Kokoia! E ara..e..i-a."

Another watch song:—

"Piki mai, piki mai
Kake mai koutou i te pinakitanga ki te Kapu-kaka
Kia noho koe e te tahakehake i te tihi ki Maunga-kawa
I hokia ruatia atu i te haupapa nui ki Horotiu
Kohe moko tai areare o te puta o te kotiro nei a Horiwaka
I te hawaninga a te ure i roa tau
I whea koia e hine whakaaro
Mau tonu mai te puku i te whatitoka o puta tarerarera
Maitara i runga i to taringa whakarongo korero
Ki te muri, ki te hau marangai
Ka tika tonu nga ure tokomaha ki roto ki to hau mihi
Ka taretare noa me he toka i piri atu
Ki te ihu o Moutara nui
Kai raro ia i reia pukutia atu e Rohu ki te puia
I hoki aromaki te hanga ure e noho mai nei
Tena i onia, i onia
Anei noa, anei noa te kai, te kai a te pare na koa
Aneane noa pare ngarehu
Aneane noa to kotiro
Aneane noa, e hiwa!"

The above song was chanted by the Hauhau watchmen in the Waerenga-a-hika *pa* during the attack on that place by white and native troops in 1865. It is said that a watchman was heard to miss some of the words when chanting it, and this omen of ill luck was followed by the fall of the *pa.*

These watch songs are termed *whakaaraara,* awakening or rousing songs, they keep the non-watchers on the alert and prevent them sleeping too soundly, and also let any prowling enemy know that the garrison is vigilant.

The following watch song is taken from Mr. White's MSS.:—

"Piki mai, kake mai
Homai te waiora ki au
E tutohu ana koa te moe a te kuiai te po koi raru ai
Ka he to manawa i te ao, e
E papaki tu ana te tai ki te Reinga
Ka ao, ka ao, ka awatea."

An old and oft quoted saying is included in the sixth chant:—

"E moe ana te mata hi tuna
E ara ana te mata hi taua."

The eel fishing eye is closed, the enemy fishing eye is open. A fisherman may doze at night as he fishes for eels; not so the fort watchman, who must ever be on the alert.

The following notes on the *pourewa* were also contributed by Tuta Nihoniho:—Another style of fighting stage was that known as the *pourewa* in the East Cape district. This was a small platform, with breastwork, elevated on a single tall post. Such platforms were erected at weak places in the defence, at probable points of attack, and sometimes one would be seen on some elevated part of the interior of the fort, used as a look-out station. Stones of the size of a man's fist were placed in heaps on all stages for use as missiles, as also sling spears and spears for hand throwing, both of which were merely pointed rods of *manuka,* not carefully manufactured weapons. These spears were, as remarked, sometimes cast by hand, with an overhand throw. In preparing these rude spears, the green *manuka* sapling rods were placed on a fire on which some green brush had been cast; this loosened the bark, which was then stripped off. The butt ends were then sharpened, first hewed to a rough point and then rubbed on a stone to give them a fine point, when they were ready for use and were tied together in bundles and hung up in a hut to be smoke dried.

It must not be supposed that the *pourewa* stage was supported merely by the top of a bare post, for that post was a tree selected for the purpose on account of its having several branches that could be cut off so as to provide a good foundation for the platform by means of beams lashed in a horizontal position to the various branch supports. See Fig. **36**, p. 87. The timbers composing the platform were then laid on these beams, everything being lashed with durable vines (*aka*). Some of these *pourewa* are said to have been as much as twenty feet in height. On these platforms there would, as a rule, be room for from three to five persons to manipulate long spears, or stones. A breastwork was constructed along the outer side to shelter the occupants from the missiles of an enemy. See Fig. **36** p. 87. This defensive screen was made by securing two uprights to the beams of the platform, lashing two horizontal rails to them, then lashing upright pieces of timber to these rails. On the outer side of this close timbered picket fence were arranged many strips of *totara* or *manuka* bark, outside of which were lashed poles to keep them in position. If any heads of slain enemies were secured during a fight they would be hung from the ends of poles projecting in a slanting position outwards from the stage, the object of this pleasant custom being *'hai tunutunu i te puku o te hoariri,' i.e.,* to cause the enemy to become unnerved. It is said that the bodies of some of Wilson's men, killed at the Waerenga-a-hika fight in 1865, were stripped naked by the Hauhaus and suspended from the stockade of their *pa.* This did not, for some reason, cause our men of the Forest Ranger type to become fainthearted or unnerved, as they soon proved to the discomfiture of the gentle savage. A most annoying person your Forest Ranger!

Stones or spears cast from these high stages were very effective missile weapons when they hit the right place.

We now see that these fighting stages were used for three purposes—(1) To protect gateways; (2) as an assistance in defending any weak or exposed place in the defences. In addition to these there might be an elevated platform situated on a knoll or other coign of vantage within the defences, and used as an observation post. Such a look-out place was useful in daytime when a raiding party was expected, and sometimes served as a station for a watchman at night, in which case a wooden gong was often suspended thereon and struck at intervals. Here the sentry kept lone vigil and chanted such songs as those given above.

The notes of Cook and Banks show that these stages were constructed up to forty feet in length, and even more, and employed in conjunction with stockade, rampart and fosse defences, not only at entrance passages, but also along the curtains or faces of a fort. Sir Joseph

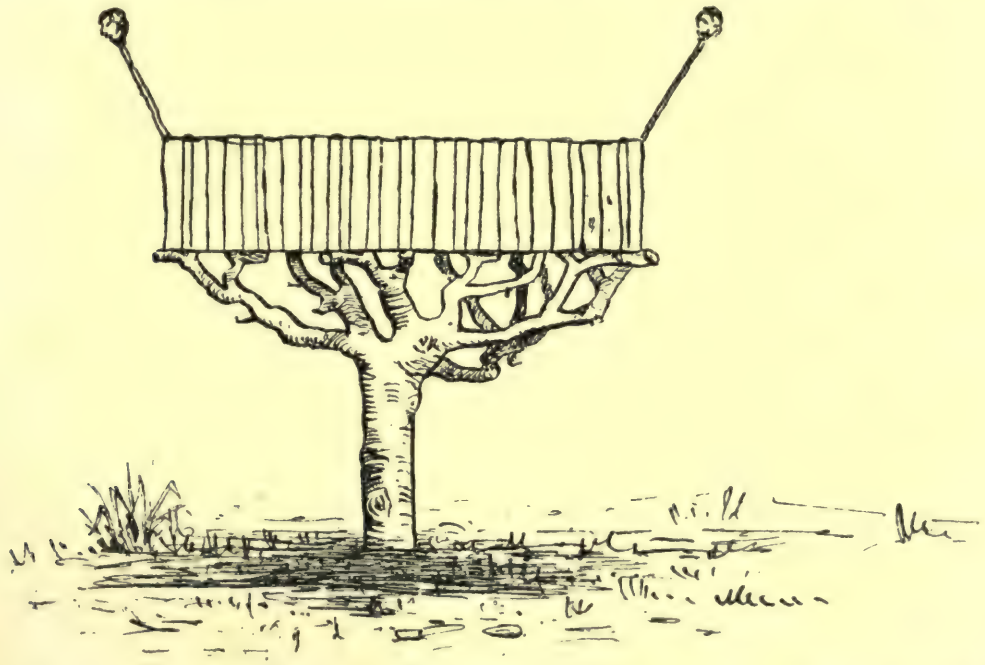

FIG. 36.—A POUREWA OR ELEVATED PLATFORM CONSTRUCTED ON A BRANCHED TREE TRUNK. HEADS OF ENEMIES EXPOSED IN ORDER TO TERRIFY ATTACKING FORCE.

See p. 86. *[Drawing by Ethel Richardson.*

Banks measured one stage 43 ft. in length, and speaks of another one as being 'much longer.' The names *rangi, pourangi, poutarewa* and *ahurewa* were sometimes applied to these elevated platforms, while *taumaihi* seems to have been applied, not only to such a stage, but also to an earthen mound used for similar purposes, at least in the Taranaki district.

Matairangi was a name applied to a look-out place on a hill top near a *pa*. "The look-out watches for approaching parties and signals to the folk of the *pa*. If he sees people coming, he waves both arms downwards twice. If it be a numerous party, he waves his arms from side to side three times. If it be a hostile party he crosses his arms in front of his head. If a mixed party of men, women and children he clasps his arms over his breast three times. The watchman on the observation stage in the *pa* notes these signals." So says my informant.

Fighting stages were employed in New Zealand, Tonga, the Marquesas, Fiji and New Guinea. In New Zealand and New Guinea they sometimes had an upward sloping floor. In New Zealand, Tonga and Fiji they often projected outwards over the top of the stockade. See Figs. **8** and **35**, pp. 12 and 81.

Gateways and Entrance Passages.

The entrance or entrances to a fortified village were always of small dimensions, that in the outermost defence sometimes smaller than inner ones. The largest would be that in the main line of defence. Such entrances were of several different forms and protected in different ways. The actual entrance or gateway was termed a *waha ngutu* or *kuwaha.* The *ngutu* was a short line of defence covering the entrance, a narrow passage formed by erecting a stockade or rampart running parallel with the outer defence of the fort. This *ngutu* might be either inside or outside the *kuwaha.* The *waharoa* (syn. *araroa, riuroa,* etc.) was a narrow lane passage inside the gateway, through which persons entering the place had to pass. In some cases it seems to have run directly from the outer entrance or gateway to the centre of the village; in others a short *ngutu* passage extended from the gateway to the *waharoa.* The latter term was not applied to the actual gateway. The *ara whakatara* was a zigzag entrance passage which, on passing through one line of defence, did not proceed directly through the next, but traversed the space between the two defences for some distance ere passing through the second line. This method might be continued until the innermost area was reached, or it might be discontinued before that. Occasionally a subway or tunnel entrance was formed under a line of defence. An old form of entrance passage to surmount a terrace was a sunk way excavated out of the brow of such terrace; this is not infrequently noted in old hill forts. The outer gateway was sometimes covered by a short detached outer rampart termed a *takurua,* or by a semi-detached rampart connected at one end with the line of defence containing the gateway. This formed a *ngutu* or *pukoro;* these forms might be situated inside instead of outside the outer defence of a fort. In hill forts the approaches to gateways were of all imaginable forms, according to the nature of the ground and the ingenuity of the people.

In Fig. **37**, p. 89, we have in No. 1 an illustration of the detached covering wall, a form of ravelin to protect the gateway. A.A. represent the outer defence of the fort. B. is the entrance passage, E. the actual gateway, C. is the ravelin or covering rampart, while D. is the *ngutu* or narrow passage through which persons passed to reach the gateway. In No. 2 we have the *pukoro* style of defence, in which the covering wall or stockade is connected at one end with the defences of the *pa.* This form might or might not have an outer gate at B. as well as that at A., and the covering defence might be either an earthwork or a stockade. No. 3 shows the same feature placed within the outer line of defence. In No. 4 we see a different form in which appears at A the entrance through a defensive rampart, from which a narrow passage skirts the defensive wall and has on its other side a containing rampart B. This passage or *waharoa* extends right across the defended area to the opposite defence, where it turns sharply to follow it a little way. At its extremity there is another gateway over which is an elevated platform, C. under which all persons entering the inner area must pass. The approach through the outer defences to reach A. might be direct or devious, according to the views of the planners. The Pehikatia *pa* at Wai-rarapa is said to have had this style of entrance. The gateway at the inner end of a *waharoa* is said to have been called the *waha tieke,* the word *waha* carrying the meaning of opening or orifice. The entrance through each of the defences was so constructed as to be easily and effectively blocked. In the case of an enemy forcing an entrance at A. of No. 4 diagram, he would find himself in a narrow lane between two high earthen ramparts, on the broad summits of which would be stationed the defenders, armed with long spears wherewith to lunge downward at the assailants. In their confined situation the attacking force would not have space wherein to manipulate long spears.

A fort might include both a *waharoa* (Syn.*araroa*) and an *ara whakatara,* the former representing a part only of the entrance passage through the various defences, and the balance being in zigzag form. Some notes on entrances are included in our descriptions of

other aspects of native forts, and others will be noted in describing the remains of the old earthwork redoubts of former times. It is scarcely necessary to say that gateways were blocked at night whenever enemies were held to be near. Also if any form of bridge lay over an outer ditch it would be withdrawn.

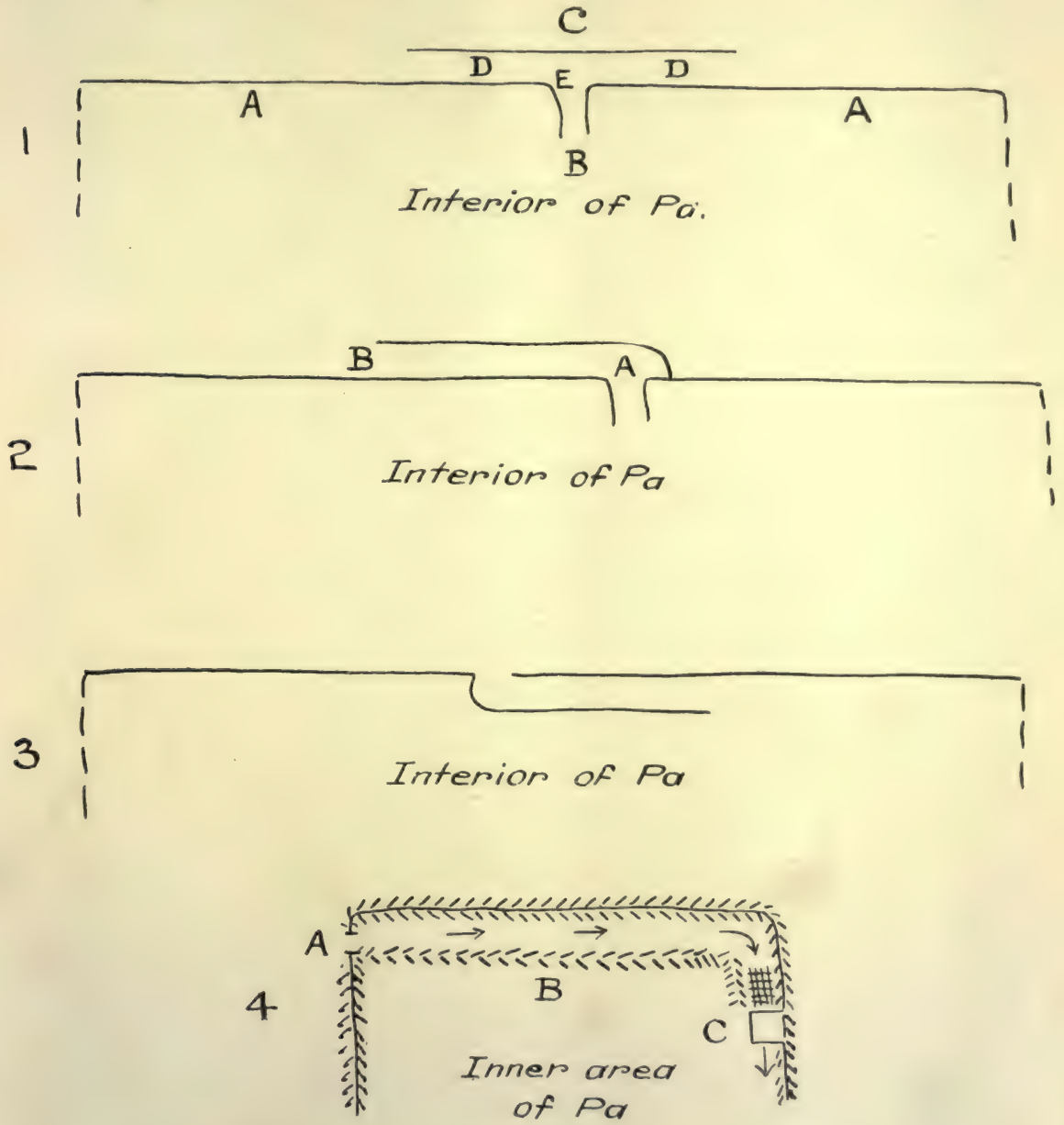

FIG. 37.—DIAGRAMS ILLUSTRATING METHODS OF PROTECTING THE ENTRANCE TO A FORTIFIED VILLAGE.
See p. 88.

The means of access to the principal stronghold of the Arapawa *pa* at Te Mimi, Taranaki, was a sunk way or excavated passage from a terrace. Such passages were often provided with flank defences, and sometimes a platform overhead. The defenders, being on a much higher level, held a great advantage at such places.

Subterranean entrances of a tunnel like character, termed *ara kutoro,* were sometimes formed as a means of passing a line of defence. These might or might not be used in times of peace, but were easily defended in case of an attempted entrance by enemies. These passage ways were formed under a wall at the time the latter was constructed, and sloped upwards to the inner area. The place of exit might have a covering wall or stockade so as to form a *pukoro.* The covering wall itself was called a *takurua.* In some cases such a passage was used only in war time, when the gateway generally used was kept blocked.

In Mr. S. P. Smith's *Peopling of the North* at p. 78, is an account of the escape of a garrison of an Auckland Isthmus *pa* by means of following one of the subterranean lava flow tunnels so common in that area. The writer has examined one of these natural tunnels near One Tree Hill that was followed for half a mile without coming to the end of it.

In rare instances a tunnel has been excavated so as to lead from the interior of a fort under all defences and outwards to a forest gulch or other cover, and used by scouts during a siege, or as a means of escape. Such a tunnel was a feature of the Hui-te-rangiora *pa* at Ruatoki, and the *pa* of the chief Nuku at Wai-rarapa, also another at Omamari. (See *Journal of the Polynesian Society,* vol. XX., p. 115.)

We have already noted the Rev. Mr. Yate's remarks on the entrances to forts as being in time of war—'through small loopholes which a full grown man has great difficulty in creeping through.' The following account by another very early sojourner in New Zealand, the Rev. Mr. Wade, gives in addition other interesting notes on the aspect of native fortified villages in the fourth decade of last century:—

"In notes from a journal published in a Madras periodical, which has just come to hand, I find the following description of a *pa,* by an individual who visited the island at the commencement of 1835. It will serve as a good general representation: 'As all the *pa* are alike in their general plan, I will describe that of Waka-tiwai, which may be considered one of the best in this part of the island. Waka-tiwai consists of a quadrangular enclosure of about four hundred feet along the front, by about two hundred in depth; the fence composed of stakes of all sorts and sizes, varying in height from ten to twenty feet, driven into the ground about a couple of inches apart, and having, at intervals, large posts of which the upper part is rudely shaped in the semblance of a human figure, in as impressive an attitude of contempt and defiance as New Zealand ingenuity can achieve: usually representing the head thrust forward, with fierce staring eyes and protruding tongue. Some of these, at a distance, really look like very valorous fellows standing upon the top of the fence. Outside, in all directions, are large mounds of cockle shells. The entrance is by an opening about two feet from the ground, just wide enough for one person; a block of wood driven into the earth serving as a step. Within the enclosure, without the slightest attention to order or plan of any kind, are scattered about a hundred rush huts and hovels, some with fenced enclosures and some without, with occasionally a small patch of potatoe ground. In all the enclosures, and elsewhere about the *pa,* are store houses, consisting of a platform raised upon stakes ten or fifteen feet high, on which are deposited the potatoes, etc., and here and there are poles on which are hung bundles of dried fish, scattering their fragrance abroad. In all directions the ground is covered with cockle shells, fragments of potatoe baskets, and other remains; whilst its surface is everywhere broken into little pits and hillocks occasioned by the constant formation of ovens for cooking. Pigs are seen wandering about, grubbing up the abandoned ovens, or waiting for their chance at the uncovering of those in present use. Their less industrious masters are squatting in groups, huddled up in their capes and blankets, smoking and chatting; while the women are tending the ovens and preparing fern root: filth and laziness on all sides.....Such is a *pa,* or fortified enclosure. A *kainga* is any other place where food is cooked, a single hut, or even a single oven."

[*J. McDonald, Photo.*

FIG. 38.—MASSIVE CARVED PILLAR CONTAINING ENTRANCE TO FORTIFIED VILLAGE.

The upper part of the *kuwaha* or entrance is just visible, the lower part being concealed by debris. Rotorua district.

Fig. 21c shows this huge carved balk, somewhat restored, as it now appears in Auckland Museum. It formerly stood in a stockade near Lake Okataina. A poor sketch of it is seen at page 107 of Terry's *New Zealand*, 1842; its height is 25ft. The debris concealing the base of the pillar was deposited during the volcanic outbreak at Tarawera in 1886.

FIG. 38A.—CARVED TOP OF A HEAVY STOCKADE POST SUCH AS WERE ERECTED AT ENTRANCE TO PA AND ELSEWHERE.

[*Drawing by J. McDonald.*

FIG. 39.—OLD ENTRANCE TO THE PUKEROA PA AT ROTORUA; NOW IN AUCKLAND MUSEUM.
The pipe proclaims it a post-European product. See p. 94.
[*From a sketch.*

The above account describes a village of the period of European occupation, and it is not an alluring picture. The destruction of the social fabric of Maoridom by European influence had a pernicious effect, one that was most marked in the abandonment of the habits of neatness formerly displayed in cultivation of food products and often in the care of villages.

Crozet gives some description of a *pa* of the Bay of Islands district as seen by him in 1772:—"All the villages are situated on steep cliffs jutting out into the sea, and we noticed that where the inclination of the ground was not great, it had been made steep by hand. We had much difficulty in climbing up, and the savages had often to help us by holding our hands. On arrival at the top, we found first of all a palisade formed of piles, driven straight and deeply into the ground, seven or eight feet high, and the ground well beaten down and grassed at the foot of the palisades. Then followed a ditch about six feet broad, and about five to six feet deep, but this ditch was only placed on the land side, where an enemy might approach. There was then a second palisade, which, like the first, served to enclose the whole village into an oblong shape. The entrance gates are not placed opposite each other. After entering the first circuit one has to go further along a narrow path to look for the entrance through the second palisade. The gates are very small.

"From that side from which they fear attacks they have a sort of outworks, equally well palisaded and surrounded by ditches, and which will hold four hundred to five hundred men. This work is only a palisaded oblong and is placed outside the village to act as a defence to the entrance."

In the Auckland Museum is preserved the carved entrance piece of the former *pa* at Puke-roa, Roto-rua. See Fig. **39**, p. 93. Another, made for the model *pa* for the Exhibition at Christchurch, is now in the Dominion Museum, Wellington. See Fig. **40**, p. 96.

The old entrance of the Okataina *pa* has been secured by the Auckland Museum. A piece has been split off the lower figure and the whole is naturally much weatherbeaten. This entrance post was set up at the *pa* near Okataina prior to the Ngapuhi raid on Rotorua, which occurred in May, 1823. It is about 25 feet in height. It is figured in Terry's *New Zealand*. See Fig. **38**, pp. 54-91.

Small secondary places of entrance of a diminutive type were often made in stockades, and were called *ngutu-ihe* and *ara piwai*.

No form of swing gate was used by the Maori in pre-European days, though the sliding door like form mentioned by the Rev. Mr. Yate apparently was. In other cases gateways appear to have been blocked by a kind of hurdle, or by a slip-rail arrangement, sometimes with timbers arranged vertically and lashed to cross pieces. In the latter case the palisades were slid up and down in some cases, and secured by bars termed *koropi*.

The following notes were contributed by Tuta Nihoniho, of the East Coast:—

The *ngutu* or entrance to a fortified village might be situated at an angle or in a *tiaroa* (curtain in military parlance), according to the formation of the ground without and within the defences. There might be two, three, or even more entrances, according to the size of the village and the aspect of surrounding ridges, etc. The *kuwaha* or gateway would, in most cases, have a stout post on either side of it. The space was not more than would just allow a person to pass through, as a rule, though the gateway of the main stockade was somewhat wider and higher. One or more of the stockade rails might be carried across the gateway in order to facilitate the blocking of the space, and to impart stability to such barrier. The outer screen was, of course, discontinued at either side of the entrance. The actual gate was often a hurdle like structure made by lashing short stout rods across uprights. It was sometimes so made as to resemble the stockade in appearance.

The Tuhoe tribe include a narrow passage leading to the gateway in the term *ngutu*, while Hurae Puketapu of Te Wairoa, Hawke's Bay, applies it merely to the gateway. (***Mo te ngutu o te pa, ko te kuwaha tena. Ko te waharoa ko te ara ki roto.***)

The hurdle-like gate was set up against the inner sides of the rails across the gateway, and lashed to them with the ever useful *aka*, or stems of climbing plants. These gates were always erected at night when the people were occupying the *pa*, taken down in the morning, and laid aside for the day.

The term *tatau* (door) was sometimes applied to the object, hurdle-like or otherwise, used to block the *kuwaha*, as seen in the following remark:—"*Ka rere nga wahine ki te whakatuwhera i te tatau o te ngutu o te pa.*" (The women ran to open the door of the *ngutu* of the *pa*.)

The spaces between the different stockades of a *pa* were often alluded to as *wa patiki*. The gate, in some cases at least, did not represent a part of the stockade, that is it was not so high, but merely a kind of wicket, short palisades being permanently lashed to rails across the upper part of the gateway, and also a short permanent palisading, like a low fence about two feet high, or a block of wood, at the bottom of the opening, over which a person had to step when entering the passage leading into the fort. It was the open space between these upper and lower sets of pickets that was the true entrance, and which was closed by the barrier. On either side of the entrance of the main defence often stood a huge and tall carved post. In some cases a great slab-like carved post, with a wide base, stood at the entrance, and a doorway was cut through the base of such post. See Figs. **38-39-40**.

The name *kiritai* was applied to the ground just outside the outermost defence of a *pa*.

In the entrance to a fort, the space between the main and inner stockades might, or might not, be closed with timbers. In a few cases the entrance passage extended directly from the outer stockade through to the inside of the earthwork, that is in a straight line, with a bridge over the ditch composed of one or more beams laid across. But, in many cases, the entrance passage turned abruptly inside the inner stockade, and ran along the ditch for some distance, ere passing through the earthwork. The passage through the earthwork might be an ordinary one with palisades and a sort of wicket to pass through, but in many cases on the East Coast it was in the form of a tunnel or passage under the earthwork. This tunnel commenced at the level of the bottom of the moat and inclined upwards, passing under the earthwork and thus emerging on the plaza inside. It was about five feet in height. This passage tunnel was not formed after the earthwork was completed, but was made at the same time. An upward sloping channel was formed from the moat bottom, then the rampart built up on either side of it until the desired passage height of about five feet was reached, then timbers were laid horizontally across the space, on the top of the wall, and the building of the wall continued on those timbers. At the inner mouth of this tunnel within the central area were heavy timbers that could, at any time, be utilised for blocking passage by the tunnel.

Whenever an entrance passage encountered a trench, a rude bridge composed of one or two stout rickers, flatted on their upper surface, was laid across, the same being easily removed if desirable. Such a bridge is termed an *arawhata*.

Where the entrance passage did not run along the trench parallel to the inner stockade, the *pukoro* method (see Fig. **37**, p. 89) would probably be adopted, and some *pa* had two such covering defences. The formation of the ground greatly influenced the form of entrance passages.

Taiepa kotikoti were lighter fences erected to enclose sub-divisions of the residential area of a *pa*, each of which would be occupied by a *whanau* or family group. Earthworks were sometimes constructed in place of such palisade fences.

The principal chiefs of a hill fort would reside in the uppermost area, the *tihi* or *toi*, which would be the scene of the last stand in case of a successful attack by enemies.

Any *tapu* place where ceremonies were performed within the fort would be fenced in to prevent trespass.

FIG. 40.—MASSIVE CARVED ENTRANCE TO MODEL VILLAGE ERECTED AT THE CHRISTCHURCH EXHIBITION OF 1906. HEIGHT ABOUT 22 FT.

The low and light fence does not represent any pre-European form of stockade. See p. 94.

[*J. McDonald, Photo.*

Chiefs often took a pride in keeping the *pa* clean, the plaza and alleyways clear of rubbish, etc. Hence such men often engaged in such work, or were the initiators of the task, whereupon persons of lower rank would come forward and assist. Wooden spades were much used in such operations.

Interior of the Pa Maori.

We have already scanned various descriptions of the interior arrangements of a fortified village, and the illustrations throw more light on the matter. We now give a few more items, as collected from early works, and from elderly natives in the years that lie behind.

Mr. Nicholas, the companion of Marsden in the northern part of New Zealand in 1814-15, speaks as follows of a Bay of Islands *pa*:—"We could perceive that the town was a fortress of very great strength, considering the rude mode of warfare pursued in this island. It was almost encompassed with a deep and wide trench, on the inner side of which was formed a breastwork of long stakes stuck in the ground at a short distance from each other, and so compactly firm as to be capable of resisting for a long time the most impetuous attacks of its undisciplined assailants. Passing this fortification, we entered the town itself, which consisted of some huts built on each side of several little lanes, or rather pathways, for they were made barely wide enough for one person to pass through at a time. Before each hut was an enclosed space, resembling a court yard, in which was a shed or out-house, employed by the inhabitants for various purposes of domestic convenience. The entrance to these enclosures was by stiles ingeniously contrived, and fancifully embellished; and I observed some on which there was a rude carving of the human form. The lanes.....were crossed in some parts with these stiles."

Early writers were much given to describing the stockade timbers of the *pa maori* as being 'driven into the earth', or as being 'stuck in the ground,' both of which are very misleading statements. Such timbers were set in suitable post holes that called for laborious exertion in sinking, and the earth was thoroughly tamped round them in order to ensure stability. The Maori possessed no apparatus that would enable him to drive heavy timbers into the earth.

Crozet describes the interior of a *pa* seen by him at the Bay of Islands in 1772 as follows:—"The interior of the village is composed of two rows of houses ranged side by side along the two sides of the palisades which form the enclosure, and every house is furnished with a penthouse, which serves as a kitchen. The savages eat their food under these sheds and never take a meal inside the house. The space which divides the two rows of houses, and which is more or less roomy, according to the lay of the ground, serves as a sort of parade ground, and extends the whole length of the village. This parade ground is raised about a foot higher than the surrounding ground on which the houses stand. It is raised by means of soil brought there and beaten down; no grass is to be seen on it, and the whole place is kept extremely clean. The whole space between the two rows of houses is only occupied by three public buildings, of which the first and nearest to the village gate is the general magazine of arms. A little distance off is the food storehouse, and still further the storehouse for nets, all the implements used in fishing, as well as all the necessary material for making the nets, etc. At about the extremity of the village there are some large posts set up in the form of gallows, where the provisions are dried before being placed in the stores..

.....

"The whole of the villages which we saw during our two months stay in the Bay of Islands appeared to be constructed on the same plan without any well defined differences. The construction and form of the private houses, as well as those of the chiefs, were the same in all the villages; they were all palisaded and placed on high cliffs. At the extremity of every village, and on the point which jutted furthest into the sea, there was a public place of accommodation for all the inhabitants."

These observations by men who saw the native villages ere contact with Europeans brought about any alterations, are the most interesting and valuable that we possess.

Meals were often taken in the porches of dwelling houses, but such porches were not used as kitchens, *i.e.*, as cooking places. Crozet's 'parade ground' would be the *marae* or plaza of the village community, where meetings took place, visitors were received, and evening amusements of young folk indulged in. A superior house allotted to visitors would impinge upon such a space. A few large houses, embellished with carved figures would represent the residences of the higher chiefs, but most of the dwelling places were but huts. Elevated store huts and platforms formed a common feature.

The latrines (*paepae hamuti*) of fortified places were sometimes situated outside the defences. These would be used by the people at all times except when the place was *awhitia* (embraced, *i.e.*, surrounded) by enemies. When a place was so surrounded the folk sometimes used a *paepae koroahu* which consisted of a tunnel-like hole or shaft sunk inside the *pa* and perhaps leading out to a cliff or steep bluff. Or the *paepae* was constructed half way down such a sloping shaft. The natives were, in former times, extremely particular concerning these sanitary arrangements. They are now remarkably careless, having lost their old time social discipline.

Special places were used as kitchen middens in a village. There would be one handy to every collection of cooking sheds. These middens are the *rukenga kainga,* or *pukaitanga para* where all refuse was thrown. Shell heaps of great size are seen on many parts of the coast where old time villages existed.

Outworks.

Although outworks were common in the case of forts constructed after the use of firearms became general, yet they do not appear to have been used to any notable extent in pre-gun days. Occasionally we see a small detached earthwork or trench near an old fort, as across the summit of a narrow ridge giving access to the place.

Writing in the twenties of last century, Earle says:—"The chief warriors took us round their camp, and exhibited to us all their means of defence, and the different works they had thrown up. Where the use of artillery is unknown the principles of fortification are simple, and the New Zealanders seem to possess a clear notion of the art; necessity being with them the mother of invention. In the direction where the approach of the enemy was expected, they had erected a strong square stockade, to molest the army, while the women and children retired to the principal fort, which was very strong and situated at the summit of the highest hill. It had a breastwork all round it about five feet high, and a broad ditch beyond that. The fortress was large enough to contain several hundred men; it had a spacious glacis in front, and every approach to it was so completely exposed that we thought even a body of regular troops, without artillery, would have found it very difficult to storm."

The time was to come when regular troops, *with* artillery, were to meet disaster in assailing the *pa maori.*

Apparently the above *pa* was not completed, as the writer does not mention any stockades except the outwork. This was evidently a place constructed by gun fighters, as witness the low wall or rampart.

Water Supply.

Absence of a water supply that could be included within the lines of defence never prevented the Maori occupying such elevated positions as hill tops, headlands, cliff summits, or isolated rocks, so long as water could be obtained at some place not far distant from the defences. But few of the pre-European fortified hamlets contained a water supply within the lines of defence. Nor must it be supposed that such *pa* were constructed on the smaller

hills, or lower ridges only; they were often made by scarping the highest peaks of ranges of considerable altitude, at a noteworthy height above plain or valley. This was rendered feasible by our humid climate and generous water supply, for, in many cases, water springs or little rills, are found within a short distance, perhaps 200 hundred yards of such peaks, more especially when the hill is covered with dense vegetation, forest, scrub, or bracken fern, as was generally the case in pre-European times. Such a water supply is generally found in the heads of the gullies radiating out from such hill peaks. New Zealand is emphatically a well watered country.

It is thus seen that, in most cases, the water supply of a fort was outside the defences, and usually at a lower altitude, as most pre-European *pa* were hill forts, hence the water had to be carried up hill, and often by paths of very steep grade. The commonest form of water vessel was a large variety of gourd (*hue*); the vessel being known as a *tahā*. Great efforts were made to procure a supply of water and food when an attack was expected, and great suffering has resulted from long sieges in many cases. Sometimes the want of water brought about the fall of a place *e.g.* the Tutae-nui *pa* at Turanga; many of such occurrences are mentioned in tradition.

In some cases, when a desperate rush was made out of a besieged *pa* in order to obtain water, baskets full of *Phormium* fibre were taken and dipped in the nearest water. The fibre retained a considerable amount of water, which, on the return of the men to the fort, was sucked out by the women and children.

The following quotation is from Dr. Marshall's book: *Two Visits to New Zealand in 1834*:—"It is somewhat singular that a people so constantly involved in wars with one another, and driven in consequence to the fastnesses of rock and mountain for security and a home, should make no provision for supplying themselves with water in case of a siege, unless indeed the siege forms no part of New Zealand warfare, or unless the besieged consider the flow of a natural stream round the base of every *pa*, which is almost invariably the case, as always accessible. Beyond a few gourds, which served them as water vessels, we found nothing to contain that simplest and best of drinks."

Dieffenbach, a writer of the fifth decade of the last century, remarks:—"The houses of the natives are generally collected into villages, which are either fortified by walls and trenches, or with high double or treble fences. Such a place is called a *pa* and is inhabited chiefly in disturbed times, when the whole tribe assembles in it. Being generally situated on the top of a hill, the *pa* are deficient in water, which the slaves have to fetch from below, at the risk of being shot by the besieging party. Within these walls are the houses, of which several, belonging to one family, stand in an enclosure.....The different families are thus separated in their fenced yards, which are, however, connected by stiles leading from one to the other, and by paths between the fences."

It must be here explained it would be an extremely small tribe that could occupy a single fortified village, such as were commonly erected. As a rule such a village accommodated merely a clan or sub-division of a tribe.

Of Te Whetu-matarau *pa* on the west side of the Awatere river, Mr. Smith writes:—"Te Whetu-matarau.....the summit of which is about 700 ft. above the sea. This place is very strong by nature, being surrounded by inaccessible cliffs, excepting in one, or perhaps two, places. It is about ten acres in extent on top, and nearly flat. Here the people had cultivations of *kumara*, etc., whilst a spring of water rises quite close to the top. Very little work in the way of scarping would make the place impregnable, and such Pomare and Te Wera found it.....The besieged amused themselves by rolling down stones on the beleaguers. This siege continued for months." This stronghold is situated near East Cape.

The water supply of a besieged *pa* might be rendered unavailable in the following manner. When the Otaka or Nga Motu *pa* at New Plymouth was besieged by the Wai-kato natives, the latter slew a woman belonging to the inmates of the fort and, having cut up

the body for cooking, washed the portions in the stream that supplied the garrison with water. This rendered the water *tapu* to the besieged folk, who could no longer use it, though, fortunately for them, they were enabled to obtain water by sinking a well. See *Maori History of the Taranaki Coast*, p. 474.

Covered Way to Water Supply.

In the work quoted above we note the following remarks on the *pa* known as Te Ruaki: —"This old *pa* is situated on the Whare-roa Native Reserve, three miles E.N.E. of the town of Hawera. It is still in good preservation, and excepting here and there where the cattle have trodden paths up the terraces, the ramparts are intact. It is a large *pa*, capable of holding several hundred people. On the north side, and leading from the ramparts down to the Tangahoe stream, is a deep fosse with high embankments on either side, which in former times have evidently been palisaded. This was the covered way down to the water supply of the *pa*, and it is noticeable because of the rarity of such provision generally in Maori fortifications. Another pecularity of this *pa* is the sloping ground to the west, which is fortified, and was evidently a modern addition to the main and older part, due to the fear that this part should be occupied by an enemy possessed of muskets, who could from there command the main position."

Angas, a traveller in New Zealand in the 'forties' of last century, writes of a *pa* at Taupo:— "Waitaha-nui *pa* stands on a neck of low swampy land jutting into the lake; and a broad deep river, forming a delta, called the Tonga-riro, and by some the Wai-kato, empties itself near the *pa*. The long facade of the *pa* presents an imposing appearance when viewed from the lake; a line of fortifications, composed of upright poles and stakes, extending for at least half a mile in a direction parallel to the water. On the top of many of the posts are carved figures, much larger than life, of men in the act of defiance, in the most savage and indecent postures, having enormous protruding tongues; and, like all the Maori carvings, these images are coloured with *kokowai* or red ochre.....a strong palisade and a deep moat afford protection against any sudden attack. Water is conveyed into the *pa* through a sluice or canal, for the supply of the besieged in times of war." See Fig. **41**, p. 101 which, however, does not show any of the carved figures on the posts.

A curious form of large vessel for containing water was occasionally made out of a large block of wood of the *matai* tree (*Podocarpus spicatus*) by splitting the block through the middle, hollowing out the two halves, save a piece left for the bottom, and then putting the two pieces together again and lashing them tightly. In the join of the two pieces was placed some moss, as also *pia houhou*, a gum that exudes from *Panax arboreum*, which served to prevent leakage. These vessels were known as *koehe wai* and *puoto wai* in olden times, these being apparently specific names, while the more general names of *kōkī wai* (both vowels long) and *poha wai* were also applied to them. These large vessels were buried in the earthen floor of the cooking sheds until only about six inches projected above the surface. They were then filled with water and covered over; the water keeping cool in such a situation. They were very useful in war time when a *pa* was besieged. Paora Tuhaere, of Ngati-Whatua, called these vessels *kūtā wai*.

In the case of a siege it has been stated that the conserved supplies of water within a fort were sometimes controlled by the chiefs and rationed out to the people, but it is doubtful if this was ever a general custom. Isolated cases of such a procedure may have occurred, but the Maori was lacking in certain phases of forethought and discipline.

There is some evidence to the effect that water was occasionally conserved within a fort in cisterns excavated in soft rock, as at Otumatua (another reported at Turakina) or some form of earth that would retain water. The latter type may be seen at the Tunu-haere *pa*, opposite Kaiwhaiki on the Whanganui river. For some notes on these latter we are indebted to Mr. T. W. Downes, of Whanganui, who also supplies a sketch of one of the pits.

FIG. 41.—STOCKADE OF THE WAITAHA-NUI PA AT LAKE TAUPO.
From a sketch by Angas. It does not quite agree with his description of it. See p. 100.

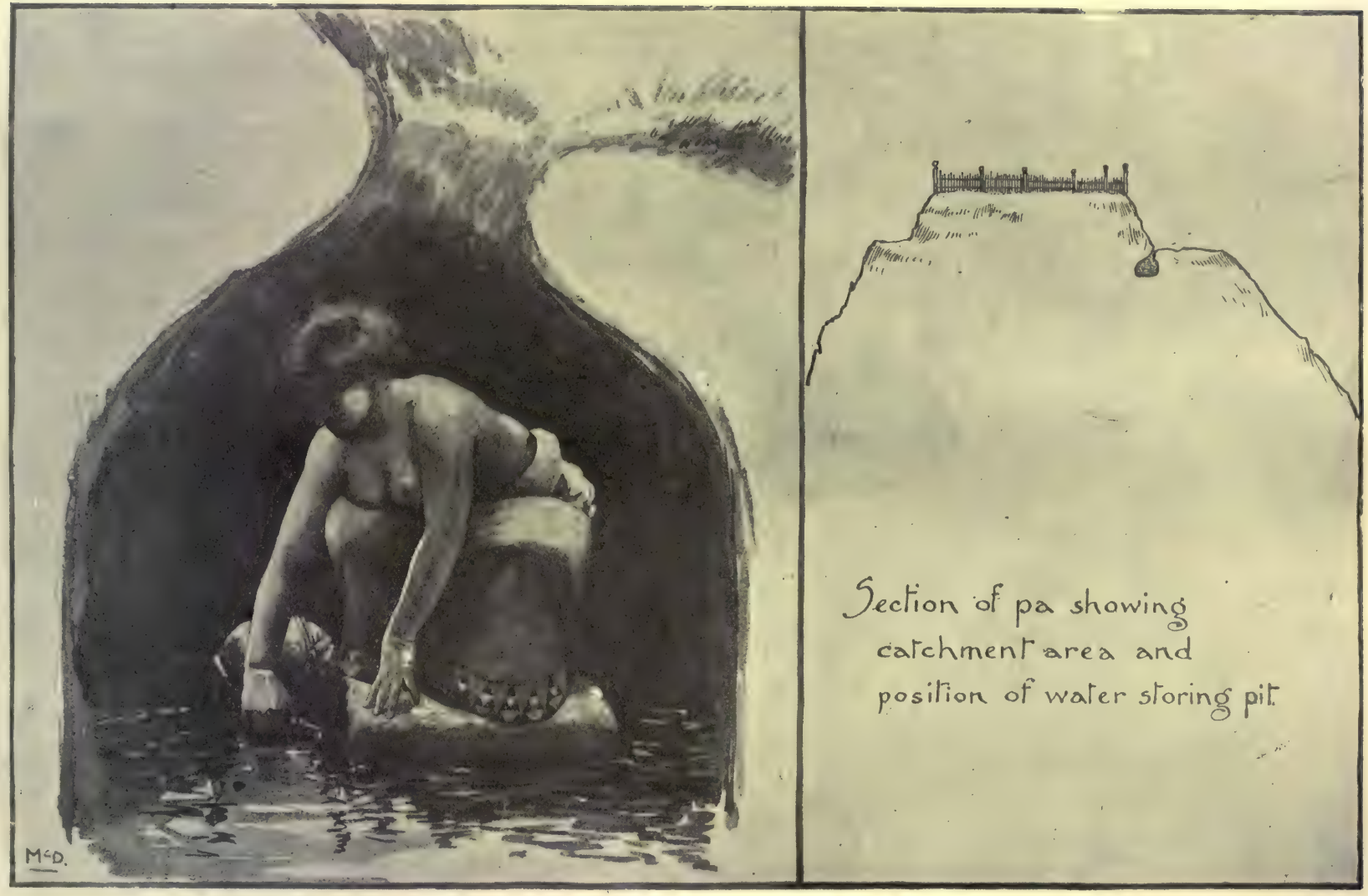

FIG. 42.—WATER STORAGE PIT AS OCCASIONALLY USED BY PA DWELLERS.
See pp. 100-103.

[Drawing by J. McDonald.

These water storing pits are semi-circular in shape, with an opening on top to allow a person to enter them, as shown in the illustration. See Fig. **42**, p. 102. In some cases the raised central part was composed of earth, and the upper part was covered with wooden slabs, in others it was wholly constructed of timber. A person descended through the mouth of the pit and stood on the raised central part in order to fill vessels when procuring water, and the slabs of wood prevented the mound of earth crumbling away. This central mound or step was left when the pit was excavated. The illustration shows the exact form of the pit examined by us, the central step being of earth, left when the pit was excavated. The wooden facing slabs have long since decayed.

These water pits at the Tunu-haere *pa* are situated at the base of a mound. This mound was formed by leaving a part of the original summit of the ridge on which the *pa* is situated when the house sites were formed by excavation. Thus the top of the ridge has been flattened except the mound so left. The pits were formed at the base of the mound, and rain water falling on the mound was conducted into them, and so stored, the mouth of a pit being covered so as to prevent waste and contamination. In some cases, according to native evidence, these pits were filled by hand.

These water pits must have been a great boon to the denizens of Tunu-haere, which is situated on the summit of a high spur, the nearest water supply being at the bottom of a gully with extremely steep sides. The Tunu-haere *pa* was still occupied in the middle 'forties' of last century. Water cisterns have been reported from several other districts; some of these reports appear elsewhere in this paper.

Water was not only stored in gourds and other small vessels, but also sometimes in large wooden troughs and dugout canoes. The following notes on the subject of water storage were contributed by the late Tuta Nihoniho, of the East Coast:—

Water was often stored in forts in large wooden troughs. These were filled with water and then covered over with pieces of *totara* bark. Calabashes were used as vessels to carry water in. Sometimes rainwater was caught in troughs placed under the eaves of cooking huts. Such a supply would not be used unless the place was invested by an enemy, and, during rain, such troughs were sometimes emptied and allowed to refill. No rain water was so caught from the roof of a dwelling hut, for to drink such water would be disastrous to man. Water was also kept in calabashes, and the curious bark vessels called *patua* were sometimes used as water vessels. Vessels made of the *rimurapa* seaweed (bull kelp) were also so employed, and any vessel that would contain liquid might be used in conserving water in a *pa*. *Paepae wai* is a generic term for vessels used to contain water.

In some cases a water spring was enclosed within the defences of a fortified place, occasionally by extending a portion of the defences to so include it. No instance is known on the East Coast of water being conducted into a *pa* in pre-European days, but, in modern times, water was conducted by a ditch into Whakawhiti-ra, a post-European gun fighters *pa* at Waiapu, situated on level land.

Tuta Nihoniho remarks that he has seen *pa* where a way to the water supply has been protected by earthworks and stockades on either side, but thinks that they were modern *pa* We have, however, seen such protected ways at *pa* that were most certainly pre-European, and abandoned before the introduction of firearms.

In some cases, when a besieged fort stood on the summit of a cliff or steep bank, beneath which was deep water, a curious contrivance was rigged up whereby to obtain water. A tall post was set up at the brink of the cliff, not in a vertical position, but leaning outwards so that a line suspended from the top thereof would strike the water. This post would be a sapling having a crotch at the top over which ran a long rope, to the end of which was secured a wooden vessel enclosed in a *toi* (Cf. *toiki*), a sort of wickerwork creel or envelope made of supplejack. It was to this envelope that the rope was attached. This vessel was lowered down into the water by means of the rope, and, when

full of water, hauled up to a level with the top of the cliff, or bank, where the rope was pulled inwards by means of a hooked pole, or a supplementary cord attached to it, or to the vessel, until the vessel was within reach of the operators on the cliff head. If possible the investing enemy would endeavour to prevent the acquisition of water in this manner, and then the besieged folk would line the cliff head armed with stones, and persuade the enemy to leave that water vessel alone.

Water is said to have been obtained in this way at the Pakau-rangi *pa*, on the East Coast. If this was so, it is curious how the famous Pueru-maku episode occurred at that historic fort. This incident happened when Ngati-Ira were besieged in that fort by Ngati-Porou, for having insulted one of their women named Tawhiu-pari, whose slave attendant they killed and ate, as an additional annoyance. After this investment had been maintained for some time, the besieged suffered much through want of water, and, at last, when the women and children were suffering greatly, a party of men arrayed themselves in thick, coarse *pueru* (capes), marched out of the fort, fought their way to the creek, where, one by one, they dipped their garments in the water, and then fought they way back to the fort, or some of them did, where the women and children sucked the water from their soaked garments. Hence this siege has ever been known as the Pueru-maku, or Wetted Garments incident. It occurred many generations ago.

An old *pa* at Mauku Falls, Franklin County, is situated on the top of the bluff near the Falls. In order to obtain water two different paths have been cut out of the steep face of the bluff at an angle of about 25 deg° These paths lead from the defences of the *pa* down to the falls, which are seventy feet in height, one reaches the top of the falls, the other a point about half way down. It is possible that these paths were protected by stockades when the place was occupied.

Some distance away from the *pa* a wall of stones has been formed along the top of the bluff, the stones to form which seem to have been carried up from the face of the bluff, for none are encountered in the fields above. The object of such a wall is a puzzle.

Part III.

Methods of Construction, Attack and Defence, Protective Talismans and Ceremonial Opening of a New Fortified Village.

CONTENTS.

Selection of site for a fortified village. Site, work and workers all under *tapu*. Ceremonial raising of first post. Human sacrifice. Tawhiti-nui *pa* at Opotiki. The *mauri* or talisman of a village. Ceremonial burying of the *mauri*. Ceremonial opening of a new *pa*. Girl employed in *tapu* removing ceremony. Why women were so employed. Ritual formulae Use of left hand in rites. Girl crosses threshold of new house in *pa*. Village site deserted. Ceremonial release of birds during above function. Defence of fortified villages. Watchmen. Methods of attack. How *pa* were burned. Stockade pulled down. Garrison reduced by starvation. Long sieges. Sapping and tunnelling occasionally practised. Clay eating. Circumvallation. Besieged folk exchange their children for food. Women defend a fort. Escalading. The forlorn hope at Awatoto. The alarm and its effect. The attack on Karewa. The Quixotic defence of Te Tumu. The gun fighters appear.

FORT BUILDING.

Construction of the Pa Maori.

THE following notes on the construction of Maori forts contain, among other matter, some hitherto unpublished data on the subject, data that has not been made known to us, owing to the jealous manner in which such knowledge has been conserved and withheld from Europeans by the few natives who possess it. This information, though not voluminous, tends to throw light on some curious phases of Maori mentality, and helps to explain certain actions and ideas that are somewhat extraordinary from our point of view.

It has long been the settled conviction of the writer that it is practically impossible to grasp and understand many of the practices of uncivilised man unless the observer is acquainted, not only with the tongue of such peoples, but also with their religious concepts and modes of thought. Such knowledge is absolutely essential to the person who would grasp and describe the peculiarities of these peoples, and can only be acquired by a residence among them of considerable duration, coupled with a keen interest in the study of the customs and mental outlook of the folk among whom he is living.

A perusal of the following matter will acquaint the reader with some of the many ramifications of the singular system of *tapu* as it existed in former times, and also illustrations of how religious ceremonial entered into Maori life. In practically every industry and pursuit the assistance of the gods was sought, directly or otherwise. The protection and help of those gods was absolutely necessary, not only in any public or private undertaking of an unusual nature, but also in ordinary daily life. The ideas connected with the *mauri* of a *pa*, of the ocean, of the forest, of a canoe, of man, etc., are of much interest to the student of primitive life and thought, tending as they do to show how much greater was the reliance on spiritual help and protection among the Maori folk than is the case with us.

We will now take the case of a superior type of fortified village, such as the *pa whakairo* of the East Coast district, and observe its construction and the ceremonial pertaining thereto. In the building of inferior or temporary *pa* no ceremony was observed, and there was no condition of *tapu* connected with the proceedings.

The first task was the selection of a suitable site for the village, and the most vital was the choosing of a spot easily defended and yet adjacent to food supplies. A hill position was the most favoured, but, if not available, then the rim of a terrace or the brink of a river bank was utilised. Adepts would then mark out the lines of the various defences and entrances, while a party of workmen would proceed to procure the necessary timbers from the nearest forest. It was necessary that the water supply should not be far distant from the village, and natural food supplies fairly abundant in the vicinity. If possible a position on or near lands suitable for the cultivation of the *kumara* and *taro* (*Ipomæa batatas* and *Colocasia antiquorum*) was chosen.

In the construction of such a *pa* as the above none but adepts were employed as workmen at the various tasks, and these were under the supervision of skilled men, usually of the chieftain class. Both the place and the workmen were under *tapu,* and women were not allowed in the *pa* until it was finished and the *tapu* lifted therefrom. Food was not allowed to be brought near the scene of labour. The workmen wore only rough *pureke* garments while at work, and these were special working garments, donned when commencing work, and taken off and left at the place when work ceased, when the worker put on his usual garments and returned to his home.

No one was allowed inside the lines of the *pa* while it was under construction save the workmen, and the adepts who superintended the work.

The first post erected in the defences of such a *pa* must be set up early in the morning. While the workmen were so engaged in erecting the first post, which stood on the *whatu* or *mauri* of the *pa,* one of their number possessing a good voice was selected to chant the following *tau* or song:—

"Moe araara, ka tau te manu ki te pae
Koheri, kohera, ka tiritiria, ka reareaia tama ki tona hiwa,
Hiwa! Hiwa!"

The singer stood on the scaffold used in erecting the post, so that his chant was heard for some distance, and, as folk heard it, they remarked: "*Kua ara te pa, me noho tatou.*" (The *pa* is being erected, let us remain quiet.) As the final '*Hiwa*' of the chant was repeated, the post was swung up into a vertical position. In this manner all the corner posts of the *pa* were erected ere the people of the village community either moved from their huts, or prepared food—*koi takahia te mana o te pa*— lest the prestige, etc., of the *pa* be disregarded by such acts.

Te Whatahoro says:—"The first *pa* that I saw erected was the Pa-whakairo, in the Hawke's Bay district. It belonged to Tareha, Renata and Paora Kaiwhata. This occurred in the year 1852. It was Paora who chanted the *tau* when the corner posts were erected. This *pa* was built in connection with tribal quarrels of that district. The defences consisted of two stockades, no earthworks were erected, as it was a gun-fighters *pa.* Paora was quite naked as he stood to chant the song, and had in his hand a greenstone *patu* (weapon) named Hine-pare."

Such a *pa* would undoubtedly possess *mana.* Hear what Judge Maning, an excellent authority, says:—"A fortress often assailed but never taken has *mana,* and of a high description too. The name of the fortress becomes a *pepeha,* a war boast or motto, and a war cry of encouragement or defiance, like the slogan of the ancient Highlanders in Scotland."

In digging a hole in which to set a large post it was necessary to make it long enough for a man to work in, as it would be excavated to a considerable depth. Such a hole was termed a *marua.*

Human Sacrifice for a new Pa or Fort.

The author of a well known work on the Maori people informs us that:—"At the building of an important *pa* it was usual to bury a slave under each of the main posts of the fence." It seems a pity that such careless statements should be made, there being no proof that it was ever a common Maori custom, indeed only one instance is known of such a procedure, and one occurrence does not prove a custom. The case mentioned is that of a very old fort near Opotiki, a fort said in Maori tradition to have been in existence when their ancestors landed in that vicinity from Eastern Polynesia some 20 generations ago. It thus seems probable that the act of so burying human beings at the base of posts was the work of the Toi tribes of mixed descent who certainly were in occupation of the district at the time of the arrival of the above mentioned migrants. Again, it may have been a custom of the Maruiwi folk, the original inhabitants of New Zealand, apparently a people of Melanesian affinities, indeed this seems by no means improbable when we consider the evidence.

It should be distinctly understood that the Maori has preserved no tradition of such a custom, or of the particular case at Opotiki, which is most suggestive and significant. Many inquiries made of old natives prove their ignorance of such a custom having ever existed; it must therefore have been abandoned many generations ago, or it was merely a local observance.

It is a fact that human sacrifices were occasionally, not often, made by the Maori at the construction of a new fort. The object in these cases, however, was something very different to the above, and the difference has not been recognised by the writer quoted. As in the case of human sacrifices at the baptism of a child, on the occasion of the tattooing of a person of rank, etc., the object was to impart prestige, *eclat*, to the function, and often a much appreciated dish at the ceremonial feast that ever accompanied such functions. In some cases human sacrifice bore a religious significance, in others the only objects were those given above. Nor did it follow that persons sacrificed were slaves; in many cases a force was despatched in order to slay a member of a neighbouring tribe to serve the purpose. In the Opotiki case there was assuredly nothing about the remains by which an observer could decide as to the social status of the persons sacrificed and, as observed, tradition is absolutely silent.

The following is the Opotiki case referred to, as given in vol. 20 of *The Journal of the Polynesian Society*:—"In a celebrated old *pa*, named Tawhiti-nui, situated a few miles west of the entrance to the Opotiki Harbour, Bay of Plenty (the history of which has been given by the late Judge J. A. Wilson), the owner of the property, in digging out the foundations of the former palisading that surrounded the *pa*, or fort, discovered skeletons in a sitting posture at the base of many of the mainposts. These were in a sitting posture embracing the posts."

Here follows Judge Wilson's account:—"The Tawhitirahi* *pa*, mentioned as overlooking Kukumoa stream, at Opotiki, lately became the property of a gentleman who proceeded to level the ramparts; along the line post holes were found, time had removed the wood, but in each hole there was a human skeleton; the workmen, disliking the look of the thing, abandoned the job. Tawhitirahi was no doubt a *pa* of great antiquity, and the men that built its battlements are a mystery. Their manners and customs, judging by this glimpse, appear to have resembled Fijian horrors described by the early European visitors to that country. They could not have been of the Hawaiki Maori race, whose traditions, generally precise, would have furnished a clue. The same may be almost as certainly said of earlier Maui-Maori people. Other *pas* have been levelled in many places, but no such ghastly remains, so far as I am aware, have been discovered."

*Tawhiti-rahi. *Rahi* syn. *nui*.

Here we have a more cautious and reliable writer who does not transform a single incident into a widespread custom. His remarks on the matter are restrained and significant. Precision and guarded comment are desirable in describing native customs; love of effect is deplorable and most harmful.

It is quite possible that this savage custom was practised by the aboriginal Maruiwi or Mouriuri folk of New Zealand, and the Maori custom of burying a *whatu* or stone at the base of one of the large posts of a fort may have been a survival of such custom. The late Andrew Lang collected many illustrations of such survivals, showing that the custom of burying living persons in order that they might 'hold up the walls' was a very widespread one. Several items published in vol. 20 of *The Journal of the Polynesian Society* show that the custom was practised in India, and the same volume furnishes the following:—"In Cundinamarca (region of Santa Fe de Bogota, Columbia) according to Piedrahita, when the aborigines wished to construct fortifications encircled by a ring of posts, they placed at the bottom of each hole in which the posts were inserted, the body of a fine young woman of good family, sacrificed for the occasion; the post was made to pierce the body in entering the soil."

The custom of sacrificing human beings at the building of a new fort seems to have obtained in many parts of Europe. In an article on Irish folk tales published in *Folk Lore*, vol. XXV., p. 378, occur the following notes:—"A skeleton was found in the wall of Dun Conor, and apparent sepulchral cists in the ramparts of the promontory forts of Cashlaunicrobin in Tirawley, and Bunnafahy in Achil, both in Co. Mayo. The remarkable case in Nennius of a child offered at the making of a fort is well known." This writer mentions similar discoveries at old forts in France.

In 1877, when Elsdon Tower, in Northumberland, was being examined, it was found that one of the walls was built on a double row of skeletons. Also a small chamber with no opening was found in a tower, and in which three horses skulls arranged in tripod form, supporting each other were found. Here we have an old pagan symbol of northern Europe secretly preserved in a Christian building into our own time. Truly my forbears who roamed the vale of Girslees and occasionally rode across Carter Fell were far from being a civilised folk.

Occasionally a human sacrifice at the completion of a new fort might be as an act of *whangai atua*, a placatory offering to the gods, as in the case mentioned by Colonel Gudgeon:—"When Ngati-Whakaue re-built their great *pa* at the Puke-roa, all the tribes in that vicinity lived for a while in a state of apprehension, for they knew full well that some victims would be required to sanctify the work, nor did they breathe freely until the blow had fallen on Ngati-Tura."

An elderly East Coast native stated that, occasionally, a person might be slain at the opening ceremony and festival held at the completion of a new fort, but that it was by no means a common custom. In such cases a slave might be slain, or a raiding party sent out to slay a member of another tribe, in fact several might be so secured; men, women or children; all were fish that came to the raiders' net. Such victims were put to two different uses; their hearts were taken out, placed on spits, and offered to the gods, while the bodies were cooked and eaten; the bones being cast to the dogs.

There is, however, no tradition as to the burial of the person, living or dead, at the base of a post, so far as we are aware.

We know that human beings were buried at the bases of house posts by the Fijians, and there is some evidence that this custom was known to the inhabitants of New Zealand in former times, though it appears to have been but little practised by them, at least of late centuries. The writer is inclined to think that survivals of the custom of human sacrifice may be detected in several Maori usages in connection with house building, and the baptism of male infants of rank.

The form of sacrifice for a new house was a fairly common one in the Fiji group, as pertaining to the erection of houses for the chieftain class. Such a ceremony was actually witnessed by a white man named Jackson many years ago. The following account has been culled from C. F. Gordon Cumming's work, *At Home in Fiji*:—"A series of large holes was dug to receive the main posts of the house; and as soon as these were reared, a number of wretched men were led to the spot, and one was compelled to descend into each hole, and therein stand upright, with his arms clasped round it. The earth was then filled in, and the miserable victims were thus buried alive, deriving what comfort they might from the belief that the task thus assigned to them was one of much honour, as insuring stability to the chief's house."

The Mauri of a Fort, How and Why Located.

Singular Beliefs and Practices of Former Times.

We have now to describe what appears to be the most extraordinary and interesting of all practices connected with the *pa maori*. There may be said to be two kinds of *mauri*, one material and the other spiritual; the one under discussion is of the former nature. The *mauri* of a *pa* was a talismanic object that held the power of preserving the fort and its occupants from harm; it was the very soul, life and heart of the place, and represented its prosperity and well-being. The material object employed was but a stone, but it must not be supposed that the Maori believed that the stone—*per se*—possessed any supernatural powers or virtues; it was employed to act as a shrine for the protecting gods of the place, and as an emblem of the same. Here follows a translation of data collected on the East Coast:—

The *mauri* of a *pa* was a stone that was placed under the bottom of the first post erected, which was always a corner post. But *mauri* were instituted only for *pa whakairo, i.e.*, for the superior class of such places, and were not employed in connection with the inferior places of defence. A suitable stone of some length was sought to serve as a *mauri*, or *whatu*, for the *pa;* its purpose was to preserve or retain the *ora* and *mana* (welfare and prestige, etc.), of the place. It was, of course, necessary that the stone be endowed with such powers by means of certain ritual performances, which ensured the welfare of the place. The following chant was recited by the officiating priest or adept when the *mauri* was placed at the bottom of the post hole, as mentioned above:—

"Ko wai taku pa?
Ko Tauira-ka-rapa taku pa
Na wai taku pa?
Na.....taku pa
He aha taku pa?
He pekerau taku pa
Tenei to whatu ko whatu ira
Ko whatu ka rere, ko whatu i rarapa
Ko te whatu na tenei tauira
Tauira ki a wai?
Tauira ki a.....
He owhio, he orongo
Tamaua, tamaua ki te pu, tamaua ki te weu
Tamaua ki te akaakanui na Tu-matauenga
Oi whiwhia, oi whiwhia, oi rawea
Oi kia mau kita, kita ki tenei tama."

In the blank spaces of the above would be inserted the name of the *atua* or protecting deity of the *pa*, possibly Rongomai or Tunui-a-te-ika, who would be viewed as its guardian or protector, and to whom any invocations made concerning the *pa* or its defence were

directed. The *mauri* was looked upon as a 'settling place,' or resting place, or abode of the god, or gods, of the fort, as a material item representing such gods, something tangible to connect such invisible deities with the *pa*. The common expression is that the *mauri* protects the *pa*, but it is not so, it is really the gods who so protect it, and the *mauri* is merely a shrine or abiding place of those gods. "*Ko te kohatu, ara mauri, o te pa hai taunga mo nga atua. Ma nga atua e tiaki i te pa, e hara i te mea ma te mauri; he taunga atua te mauri.*"

The following is some attempt at a paraphrase of the above recital:—"What is (the name of) my *pa?* My *pa* is Tauira-ka-rapa. Whose is my *pa?* My *pa* is.....What is my *pa?* My *pa* is but a poor redoubt. Here is thy *whatu,* even such as the *whatu* of old (obtained by Tane), the *whatu* of this pupil: Pupil of whom? Pupil of.....In all seasons let prosperity and safety be with us, even from the beginning. Let this *pa* possess the strength of the war god Tu-matauenga. So let strength and safety be attained, to be firmly retained by man."

The word *whatu* means a stone, also the stone of fruit, and hence it sometimes carries a meaning resembling our word kernel. It is in the latter sense that it seems to be used with regard to a *pa*. Not only is the object a stone but it is also the very kernel or core of the place; safety and prosperity rest upon it. *Whatu* = the eye and pupil of the eye, seems to be an allied meaning. The *whatu* obtained by Tane from the heavenly denizens were extremely sacred objects. This ceremonial recital really hinges upon the firm faith in, and great reliance placed upon, the gods by the Maori. Unless protected by the gods man cannot hope to survive long, for he would be open to all the shafts of magic and every evil influence.

The following notes on the *mauri* were given by Tuta Nihoniho of the East Coast district:—A superior fort always had its *mauri,* just as a superior canoe had, and should the *mauri* of a *pa* be found and taken away by enemies, they would perform a ceremony over it that would have the effect of causing the place to lose its *mana* (prestige and luck), also the inmates thereof to lose their nerve, courage, etc., and become, as it were, defenceless. The *mauri* was located at the *ahurewa* or elsewhere, often concealed somewhere at the sacred place of the fort, and charms were repeated over it to cause it to be invisible to enemies. Any evilly disposed person, and, naturally, all enemies are evil minded, who happened to find such a *mauri,* could work much harm to the people. Food supplies would become scarce, for vegetable foods would not mature, and all kinds of misfortunes might afflict the people of a fort the *mauri* of which had been polluted and its power destroyed. The *mauri* was usually a stone and it imparted *mana* to the place and caused it to be dreaded by enemies.

The *mauri* or *mariunga* of a *pa* was a stone, and it was concealed carefully, sometimes at the base of a tree in the adjoining forest. The following charm was repeated over it:—

"Hopu ringa o aitu
Hopu ringa o tangata
Ka hura, ka hura tu moana uha
Ka hura tu moana kore
Ko to manawa, ko taku manawa
Ko hou tina, ko hou taiki te ripia
Arei ana whakahotu nuku e ropi, e ropi hau
Kataina te makariri, te anuanu pua aitu he tangata."

The *mauri,* says Tuta, was a talismanic object that held the power, originating from the gods, of preserving the *pa* and its inmates from harm, and upholding their power and prestige. It was the soul and life of the place.

The *ahurewa* was a place at which religious ceremonies were performed.

The Opening Ceremony.

Lifting the Tapu from a New Pa.

The *mauri* of the *pa* having been located, probably buried at the base of the first post erected, the work of constructing the fort then proceeded. One house would also be built therein prior to the opening of the place to the public, that is to the people who were to build huts and dwell in the fort. That first house would be a large one, to serve as the principal house of the village, and would receive a special name.

When the fort and its principal house were completed, a day was set apart for the opening ceremony, explained below. This account is given as it was translated from the original Maori. The *tapu* lifting ceremony was now performed, after which all persons, including women, were allowed to enter, and a feast was held. As the people entered the new *pa* they selected sites for their huts, but in such selection deference was paid to the chief of the *pa*, whose permission would be asked in such words as, *"E ta! Ki konei pea he wahi mo toku nei?"* And the chief would assent thereto with *"Ae"* (yes).

For the ceremony of taking the *tapu* off a new *pa*, a young unmarried woman was selected to *takahi* or tread the forbidden place, and who was the first woman to enter it, as also the first person to enter it on the day the ceremony was performed. The girl so selected was usually a daughter, or grand-daughter, of the principal chief of the place, or, lacking such, then the *tohunga* or priest selected a member of some other family for the purpose, but the person so appointed must be of good family; no plebeian would be selected to fill the position. Women were so employed because it was woman that brought man into the world (a reference to the myth of Tane and Hine-hau-one, the first woman), hence it is desirable that woman should have the *mana* of the act. It was considered an honour for a girl to be chosen for this task, and only a girl of good family would be so employed, whereupon it would be said, *"Na te tamahine a Mea i takapau te pa."*—The daughter of so-and-so took the *tapu* off the *pa*. As a participant in the ceremonial she would be termed a *wahine rahiri*, or *ruahine*.

There is apparently another reason why a woman should be employed to abolish or lift *tapu;* the female is, from a sacerdotal point of view, inferior to the male element; she is lacking in *tapu* and hence is more suitable for the above purpose. It was customary to so employ either an unmarried girl or a woman past childbearing. The inferiority of woman was a firm belief; woman sprang from the earth, but Tane, who represented the male element, was perhaps the most important of the seventy offspring of the Sky Father and Earth Mother. The belief is an old and widespread one.

Another statement is that the female element is peaceful, non-aggressive; woman is not connected with war and man slaying, hence woman is so employed in peaceful ritual. She represents the *tamawahine*, or female element.

The *tohunga* or adept who has charge of the ceremonial performance instructs the girl as to her duties, and the first act on her part is to proceed to the main entrance of the *pa* and sit down on the *paetaku*, or sill, of the gateway. She seats herself astride of the middle of the beam, with a foot on each side of it, and is careful to keep looking at, or facing toward the sun; the officiating priest meanwhile reciting a certain ritual. He cries out, *"Taku ohi, taku ohi,"* and then, laying his left hand on the girl's head, he repeats:—

> "He ohi tipua, he ohi wahine tenei ka takahi
> He takahi uru rangi, he takahi uru tau
> Whakaputaia, whakaputaia he Orongonui
> Ko Akaaka-nui, ko Akaaka-nui."

This announces that the female element has entered on the scene and is about to ensure freedom from restriction, and absence of troubles, a condition supported by the gods. Also it

appeals for continual prosperity and strength. He then says to the young woman, "Arise." She then enters the *pa,* as also does the priest, and she stands at his left side. He then points with his hand to the post at the base of which the *mauri* is buried, saying, "Yonder is the *whatu,* go you directly to it." She then advances to the post, the priest following her, but he stops some little distance from it, while she advances to the base of the post. He then says to her, "Turn so as to face me, and place your back against the post." She sits down at the base of the post, with her back against it, and facing toward the priest. He then calls out:—

"Na wai taku pa?" (Whose is my *pa*?)

And then repeats the name of the *atua* of the *pa,* which *atua* (god, deity, supernatural being, or demon) may be Rongomai, or Kahukura, or Tunui-a-te-ika, or Tama-i-waho, for one of these is usually selected as an *atua tiakipa,* or *pa* protecting deity, for these are war gods. Gods of fishing, etc., would not be employed for such a purpose as the above. So the name of the *atua* is inserted here, as.....

"Na Rongomai taku pa." (My fort is Rongomai's.)

He then proceeds:—

"Tenei to aro, he aro wahine
Tapuwae nuku, tapuwae rangi
Tapuwae ki tenei tama
He tama na wai?
He tama na Tu
Na Tu-rangi whakaheke ki raro
He piere tu, he piere ta
Angiangi ki te ao
He ao tangata nau, E Rongomai
Hukia mai to aro ki tenei tama."

The girl represents the peaceful aspect of the female element. He refers to the fleeting presence of the gods and calls for enduring *mana* for the fort, alluding to himself as *tama,* or son—'A son of whom?—A son of Tu.' Tu is the supreme war deity who produced certain beings. The brevity of human life is referred to, and Rongomai, the protecting deity of the *pa* is asked to impart power and effectiveness to the ritual.

The priest now advances and stands before the girl; he places his left hand on her head, and proceeds:—

"Kia nguha to aro, he aro nui, he aro tangata."

A request to the deity to be gentle and complacent; his power and presence are great; let the people and place enjoy the benefits of those powers.

This ends the ceremony, the girl rises to her feet. As she does so, the people acclaim her and utter cries of pleasure and satisfaction.

The reason why the priest used his left hand only in such ceremonial, as when he touched the girl's head, is that the right hand is the 'evil hand,' the hand that wields a weapon and takes human life, hence is the left hand used in ritual performances, that is in religious ceremonial, and hence a left handed man (with weapons) was not allowed to perform such rites. Should the priest employ his right hand to point with, or to touch the girl with, such would be an extremely unlucky act, and it would tend to nullify the effect of the ritual, and to weaken the *mana* of the *pa.*

The young woman officiating as above was always arrayed in fine garments, and adorned in the manner Maori. She took her stand above the *mauri* because that item represents the *mana* of the *pa.* She destroys, or removes, the *tapu,* or restriction, from the *pa,* and, after this, any person can enter it, and even pass near the place where the *mauri* lies.

After the acclamation above mentioned ceases, the people enter the *pa* and salute the girl with tears and the *hongi* salutation, and *whakamānawa* (welcome) her, as—"*Haramai e hine; i haramai nei koe i te oha o ou tipuna, o ou matua.*" ("Welcome, O maid! You who hail from the revered customs and prized remembrances of your ancestors and elders.) Of such a nature would be their greeting, as they wept and saluted her. The *oha* refers to tribal welfare bequeathed by ancestors of bygone generations, and benefits obtained for humanity from the gods.

After this performance was over, the priest and girl would proceed to *whakanoa* or take the *tapu* off the new house that had been erected within the *pa*. She enters the porch of the house and opens the door thereof, then stands in the porch facing outwards. The man who is to recite the *kawa* ritual then comes forward. He is not necessarily a priest, but must be well acquainted with the ritual. Some of the *kawa* or invocations repeated at such functions are of considerable length, hence two adepts are often employed in rendering such effusions, so that, when one's breath gives out, the other at once takes up the chant, so as to cause no perceptible break in the recitation. This is repeated outside the house but there is another such to be repeated inside the building. The girl is told to cross the inner threshold, pass through the doorway into the house, and walk directly to the rear post (*pou tuarongo*), in fact she has been already taught the necessary movements. The reciter, or chanter, of the second *kawa* follows in her rear, reciting as he does so, but he halts at the *pou tokomanawa*, or central post of the house. The girl kneels at the base of the rear post, with her back against it, and facing the door. As the chant closes with the words, "*Haramai te toki, haumi e!*" the girl rises to her feet, and the ceremony is over. The women and slaves then set about preparing the *hakari*, or ceremonial feast.

This first built house is the principal house of the *pa*, and would have a special name assigned to it, as all large houses had. The ordinary dwelling huts and cook sheds, etc., would be erected after the above ceremony was performed. We may often note such an expression as 'so-and-so was the *pa*, the house within it was.....,' giving the name of the principal house only, and not meaning that there was but one house there. As I heard a native say the other day, "There was a village at Te Korokoro (near Wellington), the house was Te Pu-tawaro-rangi," meaning that such was the name of the principal house of the hamlet.

The girl took her stand at the rear post of the house on account of the *mauri* of the house being buried at that spot, even as she stood over the *mauri* of the *pa* at the corner post. But the house *mauri* and its singular attributes represents another story that must wait for the days that lie before.

Here follow some notes on the removal of *tapu* from a new fort, as contributed by the late Tuta Nihoniho, of the East Coast district:—

A *pa* of importance was in a state of *tapu* while being built, just as a high class house was. While under construction, women were not allowed to enter the place, such an act would have the effect of polluting or desecrating its *tapu*, and would also cause the workmen to become weary and listless. The *tapu* was lifted from the new *pa* at the performance of the *kawa* rite, when a high class woman, acting as a *ruahine*, was employed in the *whakanoa*, or *tapu* removing ceremony, to *takahi* or 'tread' the *pa*. While a certain invocation or charm was being recited by the priest officiating, she entered the gateway and walked over the different divisions of the fort. This took the *tapu* off the place, and the idea behind this singular act is this: that it is the inferior female element that destroys the *tapu*, the passing of the female organ over the *tapu* ground has the effect of banishing that *tapu*.

When a new *pa* was completed, the *kawa* rite was performed over it, and, when the invocation, or charm, termed the *kawa*, was recited by the *tohunga*, or priest, great stress was laid on the mode of its rendition. If the recital of the long ritual was faultless, uttered without omissions and in smoothly flowing tones grateful to the ears of listening and hyper-

critical adepts, such a circumstance was accepted as a good omen for the new *pa*; it would possess *mana,* luck, prestige, its inmates would share in such benefits, and not easily be cast down, simply because the gods were behind them. And the priestly adepts would remark—*"Tihe mauri ora, turuki ki tahito o te rangi."*

When the *tapu* has been lifted from the new *pa,* the whole of the people are at liberty to enter it, to construct houses and reside therein; whereas, prior to that ceremony, the workmen only were allowed in it. The *kawa* rite was performed at the entrance. The priest performed this ceremony and was the first to enter the new *pa* after its completion, and the *ruahine,* or *tapu* removing woman, was the second person to do so. Tribal accounts of these functions ever differ somewhat in detail.

If, however, any omission, or other error, be made in the repetition of the sacred chants, such a thing is looked upon as being extremely unlucky, no good fortune could possibly come to the occupants of the fort, hence the priests would say—"Let us remove the *pa* to another site," *Nohonoho ka hiki; he atua, he taitahae!"* Or, as we would put it—"We must get out of this; there's the devil to pay." Then that site would be utterly abandoned by the people. The new fort, albeit completed, would be dismantled, the timbers taken down or dug up, and carried away to a new site and there re-erected. The correct rendering of the invocations and performance of the ceremonies connected with the *kawanga* rite imparted *mana* (prestige, luck, etc.) to the *pa;* but, in order to preserve those desirable qualities, and endow the inmates of the fort with the confidence, etc., that such qualities inspire, it was essentially necessary that the fort should possess a material *mauri,* endowed, by means of another religious rite, with the power of retaining and preserving the luck, prestige, and fear inspiring qualities of the place.

The strange custom described below was practised by the Takitumu peoples of the East Coast:—

Another remarkable ceremony that was sometimes performed at the opening function pertaining to a new fortified position was the ceremonial releasing of certain birds by the officiating priestly adepts engaged in performing the *kawa* rite by which the *tapu* is lifted from a new fort, house or canoe.

During the performance of the above ceremony the two *tohunga* or priestly adepts entered the fort and took up positions at the two angles of the front face thereof, one at each angle. Each of the men held in his hand a live bird, the little *miromiro.* The twain then recited a very old form of ritual that has not been collected in its entirety, in which this line occurs,

"Tenei to aro, he toi tu, he toi matua, he toi taketake."

This being chanted, the name of the *pa* was then pronounced, and the recital continued:—

"Ko to aro, ko taku aro
Ko to toi matua, ko toku toi matua
Ko to toi taketake he tipua ki roto ki tenei pa
Tihe mauri ora."

As this recital ended the two birds were released by the holders and allowed to fly away free and unharmed. This singular act was simply an acted invocation to the gods, an emblematical ceremony symbolising a desire, and an entreaty to the gods, that they may so protect the *pa* and its inhabitants as to render them as free from harm as the released birds. Those birds were unharmed and obtained absolute freedom and safety at a time when, to them, death seemed assured, out of the very jaws of death were they delivered. This extraordinary symbolical act was also performed at certain other functions of a religious nature, such as the highly curious baptismal ceremony performed over infants. It is one of the most interesting items connected with Maori ritual and reminds one of statements made by certain anthropologists that truly primitive man acted his desires and prayers more than he spoke them.

The above ceremonial was for the purpose of inducing the gods to protect the place, to endow fort and people with prosperity, health, safety and success in peace and war.

The *miromiro* (*Petroica toitoi*) and *tatahore* (*Mohua albicapillus*) are two small forest birds that were, in former times, used in certain ritual functions, hence they were looked upon as being *tapu*. They are said to have been selected and set aside in ancient times as mediums to be employed in religious ceremonies performed at the *tuahu, ahurewa* and *toma tupapaku,* three very *tapu* places whereat many rites were enacted. They also entered into a very curious religious function performed when crops were planted.

How the Pa Maori was Attacked and Defended.

In troubled times the natives passed the night in their fortified places, with closed gates and a watchman (*kai matuara*) stationed on a platform or some other prominent place. This lone watcher of the night often passed much of his time in chanting watch songs, occasionally beating a suspended wooden gong (*pahu*), or sounding a trumpet (*pukaea* and *pu moana*). There were two forms of gong; one being a carefully made and hollowed-out block of wood in form of a canoe, with a narrow aperture widening out in its interior. The late Mr. C. E. Nelson of Whakarewarewa possessed one made by a member of the Tuhoe tribe. The other form was simply a flat hewn slab of wood, sometimes many feet in length. Both forms were suspended at both ends, and struck with a wooden mallet. The timber used was usually that of the *matai tree* (*Podocarpus spicatus*). Of the trumpets, one was formed of a large shell with a wooden mouthpiece affixed to its smaller end; this is the *pu moana.* The other was a long wooden trumpet made by carefully hollowing out two pieces of wood and then lashing them together; this is called a *pu kaea.*

The task of the watchman was not so much to patrol the defences as to acquaint enemies with the fact that the place was on the alert. In his *Travels in New Zealand,* Dieffenbach remarks:—"How far the fear of their being surprised by their enemies was carried will be proved by the custom, very common in a *pa,* of beating the *pahu,* a canoe shaped piece of wood about twelve feet long, and suspended by two strings, the hollow din of which sounded far and wide through the stillness of night, and was intended to let an approaching party know that they were on the alert. But many a *pa* has been taken by surprise."

The following notes on the attack and defence of native forts, contributed by Tuta Nihoniho, of the East Coast, are inserted here in their entirety:—

In very few cases, says my informant, was a well constructed *pa* taken by direct assault in former times. The usual cause of the fall of such strongholds in pre-gun days was, he states, *he moe po,* that is—the *pa* would be caught napping and entered under cover of night. An attacking force always endeavoured to advance unseen, camp at some distance from the *pa,* and send forward scouts (*kiore*) to reconnoitre the fort. These *kiore* would approach the fort under cover of darkness, and endeavour to find some place by which an entry could be made. The Maori people do not seem to have had any system of regular patrols to go the rounds of the defences periodically during the night, or any system of sentries with definite beats. No strict discipline obtained in Maoriland, and, on a cold night, such a watchman was liable to make periodical visits to a fire in some hut, in order to warm himself, or he might go to sleep on his aerial perch. There are cases on record showing that a *pa* was sometimes quietly entered by an enemy who had taken advantage of such lapses. When the Tuhoe warriors advanced against a *pa* at Orona, Taupo, they did so at night, then waited until the watchman's song ceased, when one of their number quietly entered the place, ascended the stage to find the watchman asleep, slew him with promptitude and without noise, then descended and opened the gateway to let his friends in. Then things happened at Orona.

In some cases the scouts might discover a place that could be scaled by means of a ladder, whereupon they would return to the main body, rude ladders would be made and

taken to the place, and put in position, then the force would, if not detected, quietly enter the defences, after which their aim often was to secure the doors of the houses in which the people were sleeping, which rendered subsequent proceedings much easier.

In some cases, when a *pa* had been besieged for some time, food and water, or perhaps water only, had to be guarded and rationed out, thus such supplies were treated as public property at such times. If water was very short it might be served out at the rate of a shell full (the *paua* or *Haliotis* shell) per day to each person.

Occasionally a *pa* was besieged for a long period, as much as a year, but such could only be done in exceptional cases, as where a large supply of food was stored, and a water supply existed within the defences. Cases have been known where the inmates of a *pa* long besieged have slain and eaten their children. When such a practice was resorted to, the wretched people swapped children, so as not to be compelled to kill and eat their own offspring. This was done at the siege of Te Whetu-matarau, on the East Coast, ere it fell. This siege is said to have lasted for nine months. The place was not taken by assault; the northern raider, even with the assistance of guns being quite unequal to the task.

When an attacking force gained access to a *pa*, its first action, in many cases, was to fire the houses within it. In most cases this would render the place untenable and assure the defeat of the garrison.

An investing force would occasionally set to work to construct a *kopani*, that is to pile up earth or timber near a *pa*, so as to form a mound or raised place to serve as a place of vantage from which to hurl stones, or manipulate spears.

A *pa* might be evacuated on account of an insufficient water supply, or lack of food supplies, or because its inmates considered that it was not strong enough to withstand an expected assault.

Sometimes an enemy found the inmates of a *pa* asleep, and simply opened up the entrance and walked in. Often the gateway was tied up with an *aka* vine so that any persons wishing to open it up from the outside had to cut the tough vine ere they could remove the timbers. The sound of such cutting might be heard and the attempt to enter frustrated by the inmates of the fort.

At times when no danger was suspected, no watch was kept in a *pa* at night, the only precaution taken being the closing of the gateway, or gateways. A watchman sometimes took his stand on an earthwork instead of a stage.

When investing a fortified place, a force sometimes separated into several parties, and camped in as many different places, in some cases erecting small stockades wherein to dwell. These places served as refuges and rallying places when the investing force was worsted, or a sortie from the *pa* occurred. Again, a small stockade might be erected and manned from which to run a sap toward the *pa* defences. Through this sap, zig-zagged if necessary, dry brush and wood were carried and piled up against the stockade, and fired, if not prevented by the garrison. At such a time wind-raising charms were repeated by the priestly adept of the attacking party in order to call up a wind of the right brand. If a strong wind was blowing on to the defences, such a fire might burn a passage through the different stockades, and also kindle the thatched houses within the fort, in which case the place was doomed to fall. During such sapping and fire raising operations, fighting was practically continuous, the garrison recognising the fact that it was now a case of life or death. It sometimes occurred that an enemy would get close enough to hurl firebrands, or burning torches of resinous wood on to the thatched huts. Again, burning pieces of wood were sometimes slung into a *pa* by means of a cord and stick, or whip. In some cases the garrison would succeed in extinguishing the fires, in others they could not, and, as the huts were fairly close together as a rule, destruction would result; this matter often hinged upon the condition of the water supply. A plentiful supply of water, stored handily in troughs, etc., has saved many

a *pa*. When such a fire obtained the mastery, most *pa* would become untenable, and the inmates thereof would break out and endeavour to fight their way through the investing force.

Some of the houses in a *pa* might be subterranean places, curious pit dwellings, like potato pits. These places were excavated until the walls of the rectangular pit were about four feet high, then a roof was erected over it, and the whole covered with earth, hence such places could never be fired from without the defences. The walls of these pit dwellings were lined with *raupo* bulrush lashed on to a framework. Such habitations, however, were not numerous in pre-gun days.

(Mr. T. W. Downes informs us that, in old fortified villages up the Wai-totara river, are seen many pits hewn out of the limestone formation, with steps leading down into them. The middle of the floor area seems to be the lowest part, and in the centre is a small hole. Tiny runlets radiating from this seem to show that floor drainage was the object. The remains of trunks of *mamaku* (*Cyathea medullaris*), a very durable material, may represent a former roof, and quite possibly these were old food storage pits.)

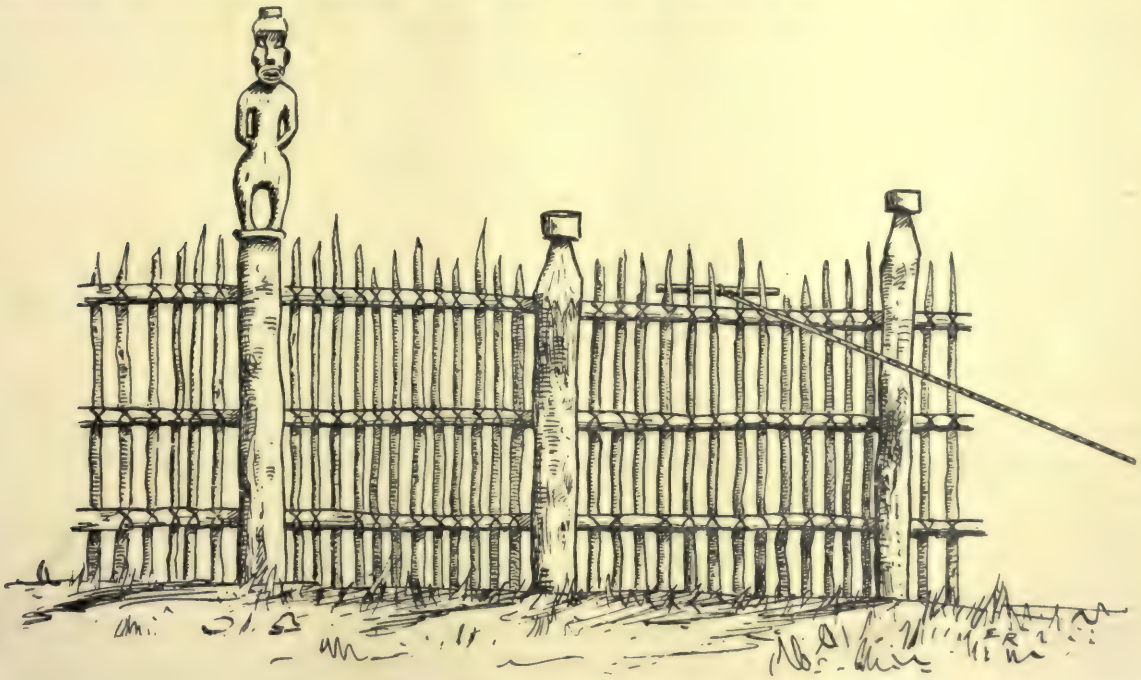

FIG. 43.—THE ROU METHOD OF DESTROYING A STOCKADE.

[*Miss E. Richardson.*

In suitable ground, sapping was occasionally resorted to in order to undermine and make a breach in the defences. Tunnels were sometimes made to enable this to be done, the tunnel directed towards the position of one of the large posts of the fort; when the base of this was reached, then the tunnel would be run along the face of the stockade, so that the stockade might be pulled down with a *koromahanga* or *rou*. This latter engine consisted of nothing more than a short stout wooden bar with a long and strong rope attached to the centre of it. The bar was thrown over the top of the stockade, and, on the rope being pulled taut, the bar would usually catch against the inner sides of the stockade timbers, in a more or less horizontal position, at the top of the upper rail. See Fig. **43** above. Then, while a number of the assailants endeavoured, with long spears or stones, to prevent the garrison cutting the rope, a large number of men 'tailed on' to it, and, hauling vigorously to a chanted time song, they tried to pull down the stockade. If successful, then an attempt

would be made to pull down the other fence, or fences, in a similar manner. In some cases the garrison would make a sortie in order to stop sapping or tunnelling operations, or the destruction of the stockades by the *rou* method.

The Titirangi *pa* at Uawa had within its defences the entrance to a cave named Te Kotore o te whenua which extended out to the ocean beach. At one time this *pa* fell to an enemy, but the people thereof escaped through the cave, or natural tunnel, to the beach, where they launched their canoes and put to sea. The sea being rough, however, some of the canoes capsized and a good many persons were drowned.

This cave seems to be the one mentioned in Cook's Voyages. See *Transactions of the N.Z. Institute,* vol. 21, p. 396. In vol. 35, p. 40, a cave is shown on the island known as Sporing's Isle.

In former times, when a raiding party was expected, the more valuable canoes were, when feasible, hauled into the *pa,* lest they be destroyed by the enemy. This is said to have been done at the Kokai *pa* on the East Coast, and Tuta Nihoniho informs us that, in his youthful days, he saw the deep grooves in the bark of *rata* trees at that place caused by the ropes when canoes were formerly hauled up into the fort. When looking at the precipitous approaches to that old stronghold it is difficult to see how ocean going canoes could be hauled into it; they may have been hauled into another fortified place in the vicinity.

The notes given by Tuta hinge upon the type of fort having outer defences of two or three stockades, with an earthen wall or rampart as an innermost defence, the stockades being fairly close together and not enclosing any residential area between them. All the huts of this type of fortified village were within the inner defence, the most massive of the defences, and the space enclosed by it was deemed the haven of refuge of the people. Hence it was that a *pa* was often alluded to as a *kowhanga,* or 'nest'; it protected and sheltered the people even as a nest shelters the young bird. This is the reason why, on the East Coast, a fortified village was often compared with the rainbow, for both represent safety and the preservation of life. The god Kahukura, whose *aria* or visible form is the rainbow, is the protector and saviour of man, as he warns him of unseen dangers. The *pa maori* is, as my informant put it, the equal of Kahukura-awhitia, the bow; the token of life and safety is with Kahukura, as also with the *pa.* (*Ko te pa e rite ana ki a Kahukura-awhitia, ara ki te tiwhana; ko te tohu o te ora kai a Kahukura, a pera hoki te pa.*)

When an enemy succeeded in entering a *pa* and endeavoured to take the last defence thereof, represented by the rampart, it was then that the fiercest fighting occurred. Many of the women would now join in the defence, and, mounting the wall, hurl down stones on the enemy in the moat below. It is said that many a fort has been saved to its defenders by means of the desperate defence made by women at the critical time of the fight.

If the enemy succeeded in passing the earthwork, then the inmates of the place might surrender, whereupon the survivors would be enslaved, or perhaps some killed and some enslaved. The enemy might call upon them to submit. In some cases fighting would still be continued among the houses until most of the garrison were slain.

In the defence of gateways, entrance passages and weak places in the defensive works, the *puwhara* or stages were of great advantage. From such a superior position defenders used long spears, stones and darts with much effect.

In the above remarks made by Tuta Nihoniho, formerly well known as an officer of the Native Contingent, he mentions one of the most serious dangers pertaining to the defence of native forts, owing to the inflammable nature of the thatch employed in hut building, and to their close proximity to each other. Once a fire got a good hold, in few cases would disaster be averted.

When efforts were made to destroy the defences of a *pa* by fire, the garrison experienced a very anxious time, and often endeavoured to burn such material as was thrown near the stockade, ere much was accumulated, or while a certain favourable wind

was blowing, that kept the flames from reaching the stockade. When such a fire was burning, an attack was often delivered by the besieging force, which meant a severe trial to the garrison, the members of which might have to stand in dense smoke to wield their long spears in repelling such attack. When the Matai *pa* at Waihora, Poverty Bay, was attacked by Rongo-whakaata, the garrison thus burned the dry *manuka* as it was brought by the attackers, and manned the fighting platforms, armed with long spears, to prevent the fire being extinguished. So irksome a task had they in the irritating smoke that one of their number acquired the name of Kapo-auahi, or the Smoke Catcher.

The Rev. Mr. Stack mentions a case in which a *pa* was set fire to by means of throwing a red hot stone on to a thatched house roof. The stone was a long one, round one end of which the operator tied a piece of flax, then heated the other end of the stone in a fire, and slung it into the *pa* by means of the cord.

Polack states that, on the alarm being given that a hostile force was approaching, the people of a *pa* busied themselves in shovelling earth against and over their thatch built houses 'to prevent the fires and torches thrown by the besiegers from taking effect.' Also they 'run to their plantations, dig up their crops, ripe or otherwise, and carry them into the *pa*.' Several writers speak of the practice of covering the thatched huts near the stockades with earth. Green flax (*Phormium*) was sometimes used for the purpose.

Mr. Colenso gives an account of an old *pa* at Tapatahi, East Coast, seen by him in 1838, which had been taken by Ngati-Maru, and of how it fell:—"At last the besiegers hit upon a mode of attack and assault which proved successful; they prepared sticks with dry combustibles fastened to one of their ends, while to the other was tied a strip of flax leaf, and the wind being favourable, they set fire to them, and then whirled and flung those flaming darts across the ditch into the *pa*, where, alighting on the dry thatch roofs of the houses and sheds, the whole was soon on fire; then, in the confusion, the assault was made."

The *pa* on the island in Roto-a-Tara (lake), when taken by northern raiders, was reached by means of crossing the lake on rafts. Again, in 1820, it was besieged for three months, and, this time, the besiegers built a causeway out from the mainland to the island, though whether in the form of a mole or floating platform we know not. The garrison erected a high platform on their side to command the bridge, to enable them to cast stones and spears down upon an enemy crossing by it. The besiegers at length managed to set fire to the huts in the *pa* by throwing fire from the causeway, but were attacked and driven back, many being slain in the waters of the lake. The garrison abandoned the *pa* that night, and escaped.

The Pakake *pa*, an island in Ahuriri Harbour, was attacked and taken, in 1824, by a northern force that reached the island on rafts made of the *raupo* bulrush.

When a *pa* was defended by numerous earthworks, it was almost impossible to gain an entrance thereto by burning the stockades. Hardwoods were preferred to *totara* in the erection of stockades on account of their resisting fire better.

When endeavouring to destroy a *pa* by means of fire, a windy night was the favoured time for such attempts. In throwing firebrands, a piece of flax was tied to one end, and the operator, grasping this, whirled the brand round for a time, until it burst into a flame, and then hurled it into the *pa*. It is said that chiefs in command of attacking forces sometimes objected to such practices, saying to their followers: "Such modes are only worthy of a low caste folk. Do not pursue such methods. If you cannot defeat the enemy in fair fight, then withdraw. Let your enemy be defeated in action, such is a manly course, the destruction of the place by fire is childish." (*Kaua e mahi tutua; kaore e mate i a koe i nga kakari totika, kati, me mutu. Kaua e tahu ki te ahi, he mahi ware; ma te pakanga e hinga ai te hoariri, ko te tahu ki te ahi he mahi tamariki.*)

When Ngati-Porou were attacking the Puke-maire *pa*, in 1865, they gained entrance thereto by means of pulling down a portion of the stockade. A rope was secured by one end to a

stout bar, which was thrown over the palisades; the rope slipped down between two of the upright timbers of the stockade until arrested by the horizontal rail. On being pulled taut, the bar was brought up against the palisades, then many men hauled on the rope and so pulled down a certain length of the fence.

The Tuatini *pa* at Tokomaru was taken by Ngapuhi by pulling down a part of the stockade, to which they had managed to fasten some ropes.

A Wairarapa native contributes the following notes:—A fortified village was often attacked just about daybreak, as soon as 'the knees of man could be seen.' A favoured plan was to make false attacks at several places simultaneously in order to draw the bulk of the defenders to such places, then another force would endeavour to force an entrance elsewhere. In this movement a weak spot would be sought, and in some cases the aim was to draw the defenders away from the *waha ngutu,* or entrance.

If the outer line of defensive works was taken, then the defenders fell back behind the second line. Some of them would be stationed on the top of the *maioro* or earthen walls, while others were in the trenches. In some of the old fortified places a stockade was the outermost defensive work, in others it was an earthwork. These latter were wide enough on the tops for men to stand or walk on. The innermost earthwork was wider on the top than the others. There were no stockades or any form of palisading on or in the earthworks in the Wai-rarapa district. The stockades were a separate defence.

Breaching and the undermining of defences were sometimes practised, and cases are known in which tunnelling operations were stopped by the defenders adopting a similar method to frustrate them. A tunnel whereby to pass under defences and so gain access to a place has been rendered useless by it being intercepted by a deep ditch excavated by the defenders. These methods do not, however, appear to have been often employed; it can only be said that they were occasionally resorted to.

In some cases a party besieged in a *pa* would remain shut up therein until the siege was raised, in others they would make sorties therefrom, and attack the investing force. The actions of a people so situated would depend on a variety of circumstances, not only on such as would present themselves to us, but also to a considerable extent on such as were produced by their superstitious beliefs.

Of the actions of the chief Waharoa, when attacked by Ngapuhi, Mr. J. A. Wilson writes:—"He shut himself up in the *pa,* and kept so close that the enemy, probably imputing his non-appearance to fear, became careless; then, watching his opportunity, he suddenly made a sortie, and in hand-to-hand conflict used them very roughly. He also made four or five prisoners, whom he crucified on the tall posts of his *pa,* in the sight of their astonished comrades."

When a *pa* was attacked, should the inmates thereof succeed in obtaining any heads of slain enemies, these were stuck on the top of the palisades of the fort in full view of the enemy. When Waikato attacked the Waimate *pa* the inmates of that place slew a member of the raiding force ere any serious fighting occurred, cut off his head and stuck it on the stockade of the fort to dismay the enemy, while the heart of the slain man was utilised as an offering to the gods in the rite known as *whangai hau.* When Waikato came to know of these happenings, they said: "It is Mata-katea and his people who will prevail in this war, since the heart of this man has been offered to the god. We shall not be able to take the *pa.*" See *Maori History of the Taranaki Coast,* p. 512.

In vol. 21 of the *Transactions of the N.Z. Institute,* Captain Mair gives some account of a siege of a *pa* at Te Karamea Bluff, ten miles south of Cape Kidnappers, about the year 1828:—"The besieged were unable to lay in a store of food or water, and sustained themselves for a considerable time by occasionally lowering the most venturesome of their number into the sea at the outer end, who would collect limpets and seaweed from the rocks, and be drawn up the cliffs by ropes." This place eventually fell, with much loss to the garrison.

When the Puke-karoro *pa* at Te Mahia was besieged, the numerous garrison thereof was reduced to deplorable straits for want of food. Hence the people eked out their scant supplies by eating clay (*uku*), and the siege is often alluded to by natives as Kai-uku, or 'Clay eating.' There are also accounts of some children being killed and eaten.

In an account of the siege and fall of the Puke-rangiora *pa,* at Taranaki, published in McNab's work, *The Old Whaling Days,* is a description of the sufferings of the besieged from want of food:—"Those who had plenty of provisions would not divide with the starving, and not even with the distant tribes who voluntarily went into their part to their assistance, and had not time to procure a sufficiency." In vol. 12 of the *Journal of the Polynesian Society* we find the following:—"When Wai-kato attacked the *pa* known as Te Ruaki, on the west coast of the North Island, they delivered an assault that was repelled by the garrison. Then they closely invested the fort by erecting right round it a strong stockade so as to prevent the garrison breaking out, or escaping, and then, for three months, they sat down before the doomed fort, until it fell. Many of its inmates were slain, many enslaved."

In his account of the siege of the Puke-rangiora *pa* when occupied by Waikato natives, Mr Skinner remarks:—"The besieging Ati-Awa now set to work and built an outer palisading and earthworks around Puke-rangiora, and closely pressed the inmates, besides cutting off all communications and food supplies. This shutting up the garrison within the *pa* gave rise to the name the siege is generally known by, *Raihe poaka,* or the 'pig-sty'; this was adding insult to injury." This siege lasted for seven months.

When the Ngati-Porou and other tribes attacked the Toka-a-kuku *pa* at Te Kaha in 1836, they erected other *pa* around it in order to invest it. It was in this fighting that the attacking force elected Christ as their war god, after the manner of the old time Jews, and other savages. Not that they made a wise selection, for they did not succeed in taking the place. Mr. Smith writes:—"The reason why this *pa* did not fall was due to the fact that it was so large that the people had cultivations inside, and plenty of food supplies stored."

In his *Maori History of the Taranaki Coast,* Mr. Percy Smith gives some account of preparations for attack made by the occupants of a *pa* called Te Taniwha, situated on a bluff four miles north of Waitara: ".....They set to work to strengthen the defences of Te Taniwha *pa.* This place is situated at the mouth of the Waihi stream, which runs along under one side of the *pa.* In order to strengthen the defences, the people set to work and dammed up the stream, so as to make a lake on one side of the *pa.*"

The principal aim of an enemy was to invest a *pa* so closely as to prevent the inmates getting out for the purpose of obtaining fresh supplies of food and water. They would also use every endeavour to destroy the defences by fire, or other means.

It sometimes occurred that, after a *pa* had been besieged for some time, the attacking force would take a quantity of food near the defences and offer to exchange it for some of the children of the besieged, to serve as food for themselves. If this offer was accepted, then it was known that the besieged folk were very short of food. Whenever such an exchange of food supplies was made, the members of the garrison made a curious arrangement, it is said, so that they would not actually sell their own children for food. They swapped children, so that each seller sold another person's child, and handed over his own child to be sold by another, a singular way of salving the conscience. As a rule only female children were so exchanged for food, they being less valued than male offspring; save in cases where the supply of girls ran short, in which case, of course, the boys were used as a medium of exchange. "Male children would develop into fighting men, hence their greater value; a girl would never bear arms, and so become a protector for you in your later years. There is also another reason; girls may marry into another tribe, and hence their offspring go to strengthen such tribes, and are lost to you. A third reason for so selling female children only is that men often take a fancy to them and so spare their lives, thus saving them from the oven."

In the time of Pehi Turoa, a party of Ngati-Raukawa raided the Whanga-nui valley, attacking and taking the Ma-kokoti *pa,* belonging to the Ngati-Rangi clan. The victors took possession of the *pa* and lived there for some time. In the meantime the local natives had assembled and invested the place closely until the invaders were starved into selling their children for food. These children were lowered down the cliff on which the *pa* stood, in baskets, to the enemy below. At length all the female children were disposed of, and but few male ones remained; these were gradually disposed of, until a boy named Apanui, of high rank, was put in a basket and lowered for sale. The investing force was informed of his rank, and, when Pehi Turoa and Hori Te Anaua saw that the besieged invaders were so hard pressed as to sell their young boys of high rank, they raised the siege and made peace.

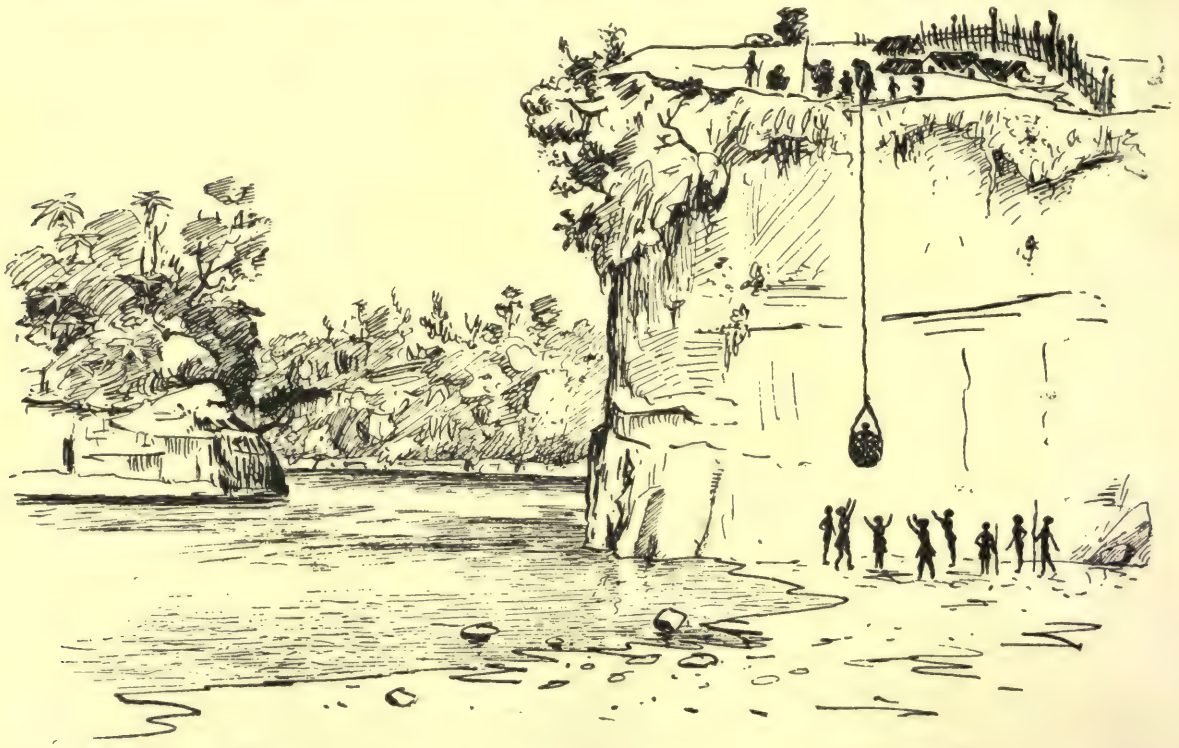

FIG. 44.—THE SIEGE OF MA-KOKOTI. CHILDREN SOLD AS, AND FOR, FOOD.
[*Drawn by Miss E. Richardson.*

In vol. 13 of the *Journal of the Polynesian Society,* p. 163, is some account of an attack made on a *pa* near Flat Point at a time when the men were out at sea fishing:—"There were none left behind in the *pa* but the women of those who were out fishing. Knowing the fate that awaited them if the *pa* was captured, they determined to defend it. To this end they secured their husbands' weapons, and after placing bandages round their breasts so that their sex should not be discovered, proceeded to repulse Rangitane, in which they succeeded for some time. At this juncture the men out at sea, observing what was going on, hastened ashore, and landed in the rear of the Rangitane force. Rangitane were now between two parties of their enemies, and on a sortie being made by the women from the *pa,* fled away inland."

In his account of the fighting between the Ngati-Manawa and Ngati-Pukeko tribes at Te Whaiti and adjacent places, Judge Wilson says of the action at Mangatara:—"It was a very peculiar battle because it was fought by women. There were only 37 Ngati-Pukeko men engaged, all the rest who fought were women, and the odds against them were fearful. But first I should say that Ngati-Pukeko had been outgeneralled. They were scattered in

pursuit of small parties, when suddenly Ngati-Manawa fell, with concentrated force, upon their headquarters, where their families were. The women were equal to the occasion. They rigged up guys so well that the enemy was deceived, and in forming for attack laid himself open to an irresistible onset on the flank. The Amazons displayed a wonderful courage and knowledge of the art of war. With hair cropped short and bodies nude, they charged into the undefended side of the enemy with such force as to throw him into confusion. Moenga was the distinguished Amazon of the day; she fought with a *paiaka*, and hewed the enemy down on every side. On all sides the enemy fell, until he broke and fled."

The Maori woman could undoubtedly hold her own when necessity arose. During the fighting on the East Coast in the 'sixties,' the Mawhai *pa* at Tokomaru was successfully defended by women against a vigorous attack by Hauhau hostiles. There were only five guns in the place; two of these were used by the only two able men in the place, the other three by young women. Other women cast stones on the enemy ascending the bluff, while a girl shot the leader. They killed thirteen of the enemy and wounded many others, eventually driving off the attacking force.

Escalading was sometimes practised. In some cases long poles were procured, to be used as rude ladders whereby to ascend a rampart or scarp. If these were not procurable, or not handy, wooden pegs were driven into the scarp as a means of ascent. This might be done by several parties at different parts of the defences, so as to confuse and distract the defenders.

The Awa-toto *pa*, at Heretaunga, which is said to have included some stone walls, or stone-faced walls, in its defences, was situated on a flat. Several attacks on this place failed, and then the following reckless scheme was adopted:—Four stout *moari* or swings were erected, one outside each of the four faces of the *pa*. These *moari* are long poles set upright in the earth, to the top of which are attached long ropes for the purpose of performing what we term 'giant strides.' Some of the most reckless of the fighting men volunteered to swing themselves over the defences by means of this apparatus, and it was arranged that the supply of aerial assaulters should be kept up until the gateway or defences could be forced. The first batch, foredoomed to dogs and vultures, swung over the defences until over the inner area, when they let go and dropped to the ground, where they were at once attacked and slain, fighting desperately to the grim last in obeyance to the old war man's maxim—"*Me mate a ururoa te tangata*"—man should die like the *ururoa* shark, fighting to the last.

While this exciting scene was in progress other warriors had swung themselves into the fort and taken part in the desperate affray, but all were killed, and the venture failed. Kahutia and Turongo-tua were two of the slain. The place did not fall.

Judge Maning gives us in *Old New Zealand* a good picture of the energetic way in which a *pa* was prepared for an expected attack when a sudden alarm was given, and the accompanying excitement:—"All now was uproar and confusion; messengers were running like mad, in all directions, to call in stragglers; the women were carrying fuel and provisions into the *pa* or fortress of the tribe. This *pa* was a very well built and strong stockade, composed of three lines of strong fence and ditch, very ingeniously and artificially planned; and indeed, as good a defence as well could be imagined against an enemy armed only with musketry.

"All the men were now working like furies, putting this fort to rights, getting it into fighting order, mending the fences, clearing out the ditches, knocking down houses inside the place, clearing away brushwood and fern all around the outside within musket shot. I was in the thick of it, and worked all day lashing the fence; the fence being of course not nailed, but lashed with *torotoro*, a kind of tough creeping plant, like a small rope, which was very strong and well adapted for the purpose. This lashing was about ten or twelve feet from the ground, and a stage had to be erected for the men to stand on. To accomplish this lashing or fastening of the fence well and with expedition required two men, one inside the fence and another outside; all the men therefore worked in pairs, passing the end of the *torotoro* from

one to the other through the fence of large upright stakes and round a cross piece which went all along the fence, by which means the whole was connected into one strong wall.... .....The repairing of the stockade went on all one day and all one night by torchlight and by the light of huge fires lit in the inside. No one thought of sleep. Dogs barking, men shouting, children crying, women screaming, pigs squealing, muskets firing (to see if they were fit for active service and would go off), and above all the doleful *tetere* sounding. This was a huge wooden trumpet six feet long, which gave forth a groaning moaning sound, like the voice of a dying wild bull. Babel, with a dash of Pandemonium, will give a faint idea of the uproar.....

"I learned something that day; and I, though pretty well 'up' in the noble science of fortification, ancient and modern, was obliged to confess to myself that a savage who could neither read nor write, who had never heard of Cohorn or Vauban, could teach me certain practical 'dodges' in the defensive art quite well worth knowing."

The Rev. J. A. Wilson, in describing a *pa* on Mayor Isle, states that, when Tautari of Ngati-Pukeko attacked it, his force was put to flight by a huge stone that was rolled down from the *pa* heights upon the attacking party:—"The stone, already arranged with levers beneath, was weighed out of its place over the edge of the rocky battlement, and let loose on the advancing mass. The thundering noise of the block, as in the stillness of night it passed through the severed files of the enemy, joined with the war yell of Ngai-Taiwhao, and all their musketry from the crest of the *pa,* made those deep valleys resound and echo with revenge, driving back in confusion the assailants, who in haste gathered up their slain and wounded and retreated to their canoes."

In *The Peopling of the North* is given an account of how the occupants of the Mangere *pa* covered the land round their fort with shells, so that any enemies approaching it might be heard as they walked on the dried and fragile shells. The purpose of the shells was, however, divined by an attacking force, the members of which muffled the sound of their approach by spreading their garments over the shells. In the same work is an account of how the island *pa* of Motu-karaka was taken by means of placing long spars against the cliff and so constructing a rude ladder.

Colonel McDonnell gives some account of a *pa* known as Ka-rewa-ki-runga, situated on the left bank of the Hokianga, about twenty miles from the Heads:—"A high hill, the summit of which had, after great labour and skill, been fashioned by many hundreds of pairs of hands into a formidable *pa,* hewn out of the solid earth. It was the principal stronghold of the settlement, and even to the present day, though most of the outer lines have been filled up with dry leaves and rubbish, and the outer and deep ditch is now less than half its original depth, enough remains to form a good idea of what this fighting *pa* once was. It would probably have taken five hundred navvies, working with pick, shovel and barrow, twelve months hard work to cut down and form this work; but when one knows that all the tools with which this work was undertaken, and accomplished, were only bits of hard wood, pointed and burnt hard in a fire, and the only means of carrying away the thousands of tons of earth, stones and gravel, were small buckets made of flax, one is forced to admire the courage and perseverance of the Maori of those days.....

"Ka-rewa-ki-runga was the fighting *pa* of the Popoto tribe, at the time I speak of, and they numbered over one thousand warriors.....The villages under Ka-rewa-ki-runga were Otaihau, Te Horeke, Parepare, Manga-tete, Manga-raupo and Wai-kahanganui. The *pa* frowned aloft some 700 feet above the villages, and commanded the whole, but about a mile from this hill were two other *pa,* which had also been cut out of a solid hilltop.....

"Each of the three *pa,* even when no war party was expected, was held by an efficient garrison, and the tribe took turn and turn about, naturally and by instinct, to guard them. Hundreds of short darts, so pointed at the ends that, on striking an object, the point would remain in the wound, and, being barbed, prove difficult to get out, were kept in covered pits.

Heaps of round iron stones, weighing from one to five pounds each, were collected from the beach and piled up for the use of the slingers' *kotaha;* and heavy logs and boulders were kept in place on the outer ditch to use in case of an assault, and ready to launch over the precipitous sides of the *pa,* in case such a defence was required. Before early dawn, which the *tui* and bell bird heralded each morn, the war note of the watchers in the *pa* proclaimed all was well, and a good watch kept."

The above writer makes the following remarks concerning these forts at a time when enemies were expected:—"Each *pa* had its usual garrison doubled, and an extra row of *manuka* stakes was shown to have been placed round the already double palisaded *pa.* The green boughs and leaves were left on each stout stake, as a hint that any attempt to surprise the garrison would be vain, and without hope of success."

Later on, he again refers to the main *pa*:—"The top of Ka-rewa-ki-runga was oblong in shape, about eighty feet long by about fifty feet broad, about thirty-five feet above the rest of the hill from which it had been formed, and the sides were steeper than an angle of 45 degrees. A deep ditch surrounded this fortified mound, which was six feet deep and twelve feet wide, and the earth taken out of it, and from the cutting away to form the *pa* itself, was used to make outer lines of breastworks, and make the rest of the hill steeper and smoother in doubtful places. A double palisade had stood on the outer edge of the ditch, and I remember several of the old *puriri* posts that had formed part of it, as sound in their positions as if freshly placed there, but I believe *puriri* will last as long as iron.

"During the war with Hone Heke in 1845-46, my father, Captain McDonnell, R.N., fortified Te Horeke, then our homestead, and had two 32-pounders dragged up to the top of Ka-rewa-ki-runga, and placed in position there, and at one time we had a garrison of 300 river natives, whom he partly armed with flint lock Tower muskets, and no end of ball cartridge; and there is no doubt the news of our garrison, and one upper and lower battery of two 32-pounders, seventeen pieces of cannon lower down, consisting of 18-pound carronades and long sixes, had a grand moral effect on those natives who were hesitating which side to join."

Again, we quote from the above writer an account of an attack on the three above mentioned *pa* made by Ngati-Whatua some years prior to the arrival of Captain Cook. The story is of interest as illustrating the treacherous side of the Maori character:—

The Popoto tribe of the three *pa* had given a feast to the Ngati-Whatua clan, over 2000 of whom attended. At the reception 1,500 fighting men of Whatua, and about an equal number of the Popoto performed the war dance, until, as the Maori narrator put it, the Ka-rewa-ki-runga hill reeled again. So fine a feast was provided that the Whatua folk determined, when they left, to proceed but a little way on the homeward road, then to double back, approach the three *pa* under cover of night, and surprise them at dawn, wipe out the Popoto clan, and seize their fine food producing country; an excellent plan, but it did not work out right. When the visitors returned home, about twenty of the Popoto folk, including a girl named Ponaiti, accompanied them as an escort as far as the tribal bounds. When traversing the forest, the escort was attacked and slaughtered, except the girl, who was detained as a slave wife for a chief named Te Koukou.

Meanwhile the Popoto of the three forts were ignorant of all this:—"When Ponaiti, the girl, stood in their midst, nearly dead from fatigue and running, but she managed to tell her people of the slaughter of her father and other relatives, ending her horrible tale by saying that Te Koukou was on his way to surprise the three *pa* and kill everyone. Ponaiti said that she had so deceived Te Koukou as to lead him to think she would remain at Mangakahia till he returned, but she had fled through the forest after they left, to reach home ere they could attempt a surprise.

"Get ready for them"—was the only sentence that fell from Muriwai, the Popoto chief. And then—the tribe was like a flock of birds all at once. Men with *tapu* backs, and still more *tapu* heads, seized huge baskets of *kumara,* bundles of dried fish, gourds of water,

and streamed up the hill sides to the three *pa*. In less than the roasting of a small *kumara* in the ashes, the villages were deserted, and all was quiet in the three fortresses,—and ready.

"They will not go to the villages," said the leading warriors, "but will attack us at dawn; they think they are sure to surprise us, when the destruction of the settlements would follow."

"Scouts were sent down the hills to give notice of their approach. They soon returned and reported the advanced guard of the enemy creeping up the hills, followed by the main body. "Let them come close, and be ready with the logs and boulders, with slings and spears. I will give the charge"; such were the words of Muriwai. Several messengers were despatched, by the rear of the *pa* adjoining the bush, to warn the river natives at Opara, at Taheke, at Wairua, to warn them to attend to closing all the tracks, so that not one of Ngati-Whatua should escape, after they were defeated, for that result was looked upon as a certainty, as the *tohunga* had foretold it.

"Silence now reigned in the three forts, as the occupants awaited the coming storm; but as objects began to form out of the darkness, the enemy were seen within a few fathom of the *pa*, preparing for the final rush up the steep slope in overwhelming numbers.

"The chief passed the word, and then one wild, horrible yell burst from Ka-rewa, quickly followed by two more frantic war cries from the two other *pa*. These were returned by the enemy, who had now to win or be eaten. It was a case of your head or mine, and the attacking force rushed up the slope to the assault; but the avalanche of rocks and logs, the showers of slung iron stones, the well aimed darts, met them and beat them down. The enemy fought with determination, well knowing the terrible result of defeat in a case like theirs. The three forts were attacked simultaneously, but heavy logs rolling down the steep sides of the hills bore down tens of warriors, and many jaws were broken and skulls cracked by the slingers. At last, seeing that their attempt was hopeless, the enemy broke and fled in every direction. At once the pursuit was called by Muriwai:—"Show no quarter. Kill all; and the empty calabashes will be filled ere night. We will have enough dried heads to adorn every post in the fort and village, and our women shall sing to them with the flutes we will make out of their bones."

"The garrisons of the three forts streamed forth in pursuit, while old and infirm priests, who viewed the battle, cursed them in their flight. One such effusion was curious, '*Haere! Haere! Ka tahuna e au nga hinu o to tuaroa hei turama haere i to wairua ki Te Reinga. Haere! Haere! Tenei au te haere nei!*" (Run! Fly! I will melt the marrow of your backbones whereby to light your spirits to Hades. Run! Run! I am in pursuit.)

"And they ran. Many brave deeds were done, but what was the use of defeated men fighting? Many of them never warded off the death blow, lest they be made prisoners and tortured. Very few escaped. Many fell into the hands of those guarding the tracks, and their varied tortures afterwards amused the people for several days, until, finally, they were eaten.

"As for Ka-rewa, the hill side, from summit to base, smelled of the blood and flesh of men, for the slaughter had been great, but the tattooed heads of the slain enemies were dried and stuck upon the stockades of the forts, and on every carved post in the villages beneath."

With the curious fatalism of his race, the Maori at times persisted in defending positions that were emphatically weak, and seemed to engage in such foolhardy enterprises with a singular calmness.

In his account of the taking of Te Tumu *pa* in the thirties of last century, J. A. Wilson tells us that it was not a strong place, and that it contained only 100 men:—"The garrison was too weak to hold the position against the large odds to be opposed to them, and too proud to desert it." The attitude adopted by Kiharoa, one of the principal chiefs of the *pa*, was apparently that of a fatalist:—"When asked if the enemy had not arrived at Maketu in great force, he replied by taking up a handful of sand, and saying, 'Yes, there is a man there for every grain of sand here.' Then, suffering the wind to blow the escaping sand away,

he exclaimed, '*Hei aha!*' (what of it!)'' This *pa* was assaulted by 1600 men; of the 100 men of the garrison, 67 were killed, also 180 out of 200 women and children in the *pa* were killed or enslaved.

Mr. Wilson relates a curious incident that occurred the night before the attack:—''And now, as morning approached, a young man volunteered to reconnoitre the *pa*, to ascertain whether the garrison was on the alert, and though several endeavoured to dissuade him from the rash attempt, he went. Passing in the shade along the river bank, he entered the *pa* as an inmate returning within its precincts, a not uncommon occurrence, and made his rounds without attracting attention, farther than that one man seemed to eye him for a while; then making his exit in the manner he had entered, he reported that the people had evidently been at their posts all night, but had gone to bed, leaving only a few sentinels on duty.''

The introduction of firearms came as a great shock to the Maori, and rendered some of his defences utterly useless. Their keen minds, however, trained by many centuries of warfare and self-preservation, quickly grasped the new position and, by rejecting a few methods and modifying others, the Maori soon evolved a new form of redoubt superior to any constructed here by either Imperial or colonial troops.

Dr. Thomson, of the Imperial service, in writing of the *pa maori*, or native forts, remarks:—''Firearms have completely changed the construction of the above strongholds. Formerly the ditch, twenty-four feet deep, was dug to obstruct the enemy; now ditches are only five feet deep, and are used as rifle pits to fire out from. Loopholes and flanking angles have been introduced, and bells supply the place of gongs.

''In besieging fortifications New Zealanders held that wisdom was better than weapons of war; and never attempted open assaults. Occasionally red hot stones were thrown from slings, in the hope of setting a *pa* on fire, and advances were made close up to the walls by underground approaches, or by parties protected from the enemies' spears by shields of flax and reeds. But a *pa* was seldom taken by such means, although sieges occasionally lasted six months. Treachery, stratagem, starvation, and panics were the chief instruments besiegers trusted in for success.....

''In besieging a *pa*, the besieged were occasionally drawn out into ambushes by an apparent retreat. In such ambushes the parties were not crowded together, but stood some distance apart, as the proverb says, ''About the distance of the taniwha's teeth.''

''Forts have been captured by starvation. In such cases they were regularly invested by encircling them with stockades.

''Panics occasionally led to victory.....Night attacks were never made. The early dawn was the favourite hour for a surprise.''

The depth of fosse given above is excessive, and was but seldom seen, though when the scarp brows carried heavy ramparts the total depth of the inner scarp was in some cases 18 ft. to 25 ft. An excavation 24 ft. deep was certainly unusual, though occasionally seen. It also seems probable that forts were reduced by means of fire more frequently that the above writer implies. His remarks anent luring a garrison out of their fort by means of a feigned retreat are correct. Such a stratagem was often employed, and is termed *manukawhaki*. As to circumvallation, we have already seen that it was not a common occurrence. The great aim was to surprise an enemy.

The effect of firearms is well illustrated in an account of an expedition of northern natives to Taranaki and Port Nicholson, as related by one of the party, and translated by Mr. Percy Smith:—''We had with us four guns. When we arrived before a *pa*, our marksmen went in front of the party, and as soon as the enemy saw us, they would recognise us as a hostile party, and their warriors would ascend to the *puwhara* (fighting stages) so that they might be the better able to throw down stones at us. Those braves did not know of the gun, nor of its deadly effects. When they got up to the platforms, they would grimace and put out their tongues at us, and dare us to come to attack

them. They thought that some of us would be killed by their stones. Whilst they grimaced away, we used to fire at them. It was just like a pigeon falling out of a tree. When the others heard the noise, saw the smoke and the flash, and the death of their braves, they thought it must be the god Maru that accompanied us, and that it was by his power that their men were slain by the thunder of that god Maru. Then the whole *pa* would feel dispirited, and stand without sense, so that we had only to assault the *pa*, without any defence from the people. The people of the *pa* would have all the lamenting and we all the cheers. Those that we killed, we ate; those saved we made slaves of."

Both Imperial and Colonial troops have good cause to remember the *pa maori*. When the British troops charged the redoubt or inner defence at Rangiriri, they encountered an unscaleable earthwork that effectively stopped them. At Orakau, a rough defence hastily thrown up by the natives, was assaulted twice ineffectually, and the troops were compelled to take to sapping and big gun fire for three days ere they could dislodge the defenders.

Part IV.

DETAILED DESCRIPTION OF OLD FORTIFIED VILLAGES.

Fortified Villages Situated on Flat Land, Hill Forts, Fortified Mounds, Ridge Forts, Headland Forts, Cliff Forts and Refuges, Fortified Islands and Island Refuges.

CONTENTS.

Fortified villages on flat lands. The Manu-korihi *pa*. Massive earthworks. The Rewarewa *pa*. Hill forts. Otumatua. Interior aspect of a *pa*. Urenui. The Okoare and Te Koru fortified hills. Stone faced scarps. Puke-tarata. Ihupuku. Peculiar store pits. Fortified hillocks or mounds. Pohokura. Pahitere. Ridge forts. Otumoana. Okoki. Bay of Islands district. Hill fort at Kawakawa. Taiamai district. The Taka-poruruku, Tapa-huarau, Oneone-nui, Kai-tangata, Tunu-haere and Potiki-a-Rehua forts. Terraced hill forts. Terraced hills of Auckland isthmus. Heipipi at Petane. Otatara. Puketapu at Omahu. Wahine-iti fortified villages at Waiapu. Mangere. Pouerua. Maunga-turoto. Te Ruahoanga. One Tree Hill. Mount Eden. Nga Puke-pango. Promontory forts. Te Rerenga at Waiwhakaiho. Pari-hamore at New Plymouth. Kumara-kai-amu and Te Kawa at Urenui. Mawe at Lake Omapere. Omaha and Te Kawau. Tutamahurangi. *Pa* attacked by French at Bay of Islands. Island forts and refuges. Island *pa* of Horowhenua and Muhunoa. Roto-a-Tara. Whare-okoro. Bare Island. Tutira. Te Pakake. Island refuges at Wellington. At Mercury Bay. Pa-tangata at Tonga-porutu. Island refuges at Napier; at Bay of Islands; at Queen Charlotte Sound, Poroutawhao and Te Hurepo. Tree refuges. Cliff forts and refuges. Paritutu at New Plymouth. Mikotahi. Waimate. Aromanga at Whanganui. Te Namu. Pohaturoa. Maunga-raho. Taratara. Rangatira on the Waipaoa.

Fortified Places Situated on Flat Land.

VERY few old native forts are seen entirely surrounded by flat land, for such a situation was abhorred by the Maori. If a hill site was not obtainable, he constructed his *pa* on the brink of a terrace, or on the bank of a river, stream or lake, thus he possessed at least one easily defended face. Of this type are the three here described, and many more examples might be given, but such do not present the most interesting features of native forts. In most cases forts so situated are those possessing the simplest contour lines, as near as we see to rectangular areas, such as Te Kupenga at Te Teko, and Otenuku at Ruatoki. An interesting feature in the latter is a deep fosse and a rampart dividing the fortified area into two parts, these works being as strong as the external defences.

The three fortified areas described under the above heading consist of level land, though the outer lines of all impinge upon precipitous bluffs overlooking rivers.

Manu-korihi Pa, Situated at Waitara, Taranaki.

This is a remarkably fine specimen of an old pre-European fortified position, showing some very heavy earthworks that are well preserved, which same are a good illustration of the massive defences adopted by a neolithic folk poorly supplied with missile weapons. This old fort was occupied for centuries, and was abandoned about the year 1826. In 1842 when examined by Mr. Carrington it was covered with a growth of light bush and fern; it is now (1914) entirely covered with a fine sward of grass, and has been so covered for many years.

Mr. Carrington was a surveyor, and made a plan of this old fort, which is here reproduced. See Fig. **45** below. In Fig. **46**, p. 131, appears the rough plan made by myself in 1914, seventy-two years later. A portion of the outermost rampart has been levelled since Mr. Carrington made his plan, also his 'Outer trench' has disappeared. The heavy rampart at D would have no stockade on it. On any high rampart having a stockade on it there would be sufficient space inside it to allow the defenders to stand there and manipulate their long spears, which would be thrust between the palisades.

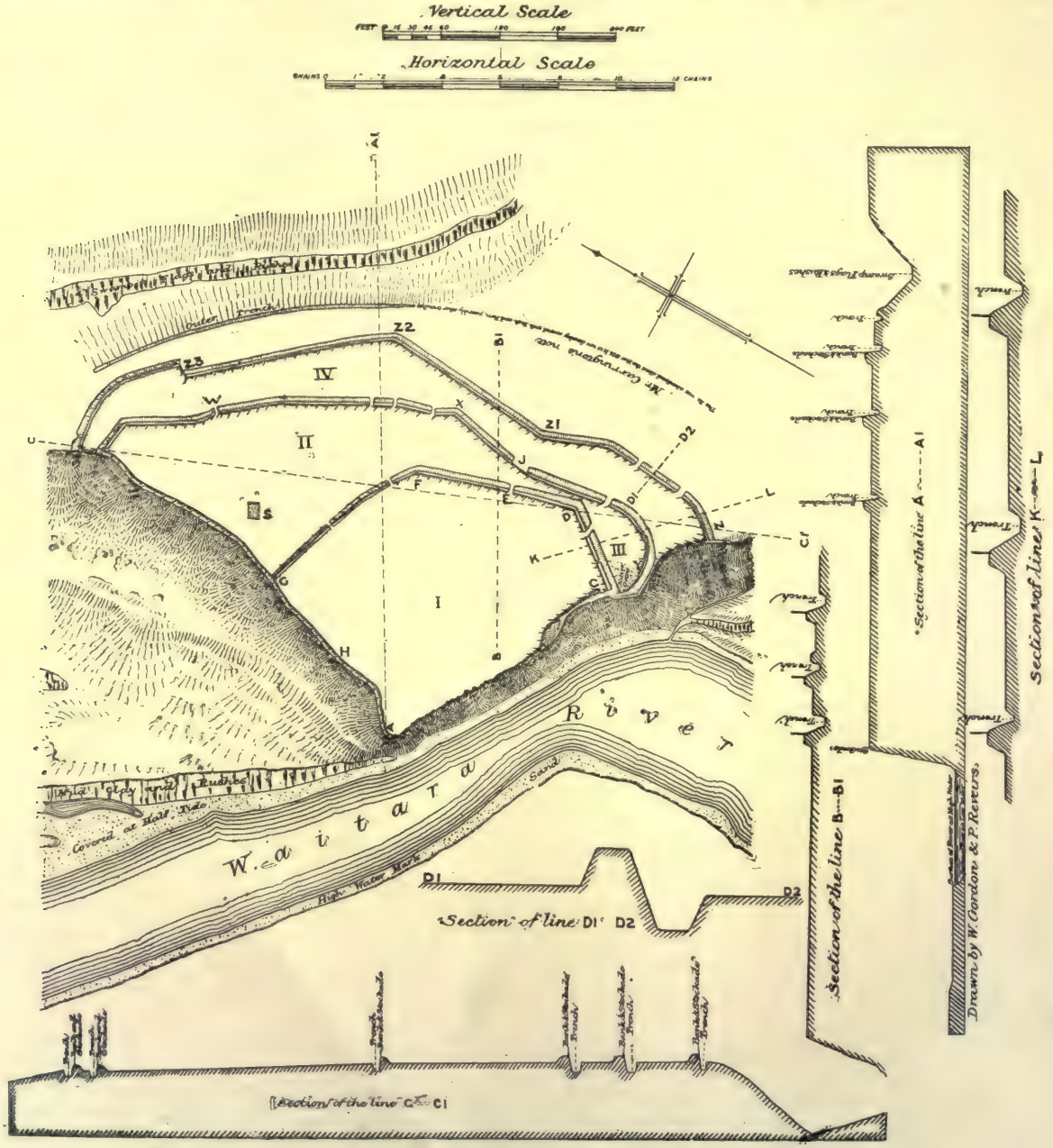

FIG. 45.—PLAN OF MANU-KORIHI PA AT WAITARA. PREPARED BY MR. CARRINGTON IN 1842.

This *pa* is situated on a bluff overlooking the Waitara river on its northern side, and near the township. This high bluff facing the river is perpendicular and it trends back from the river to form the western face of the *pa*. Thus two sides are protected by steep

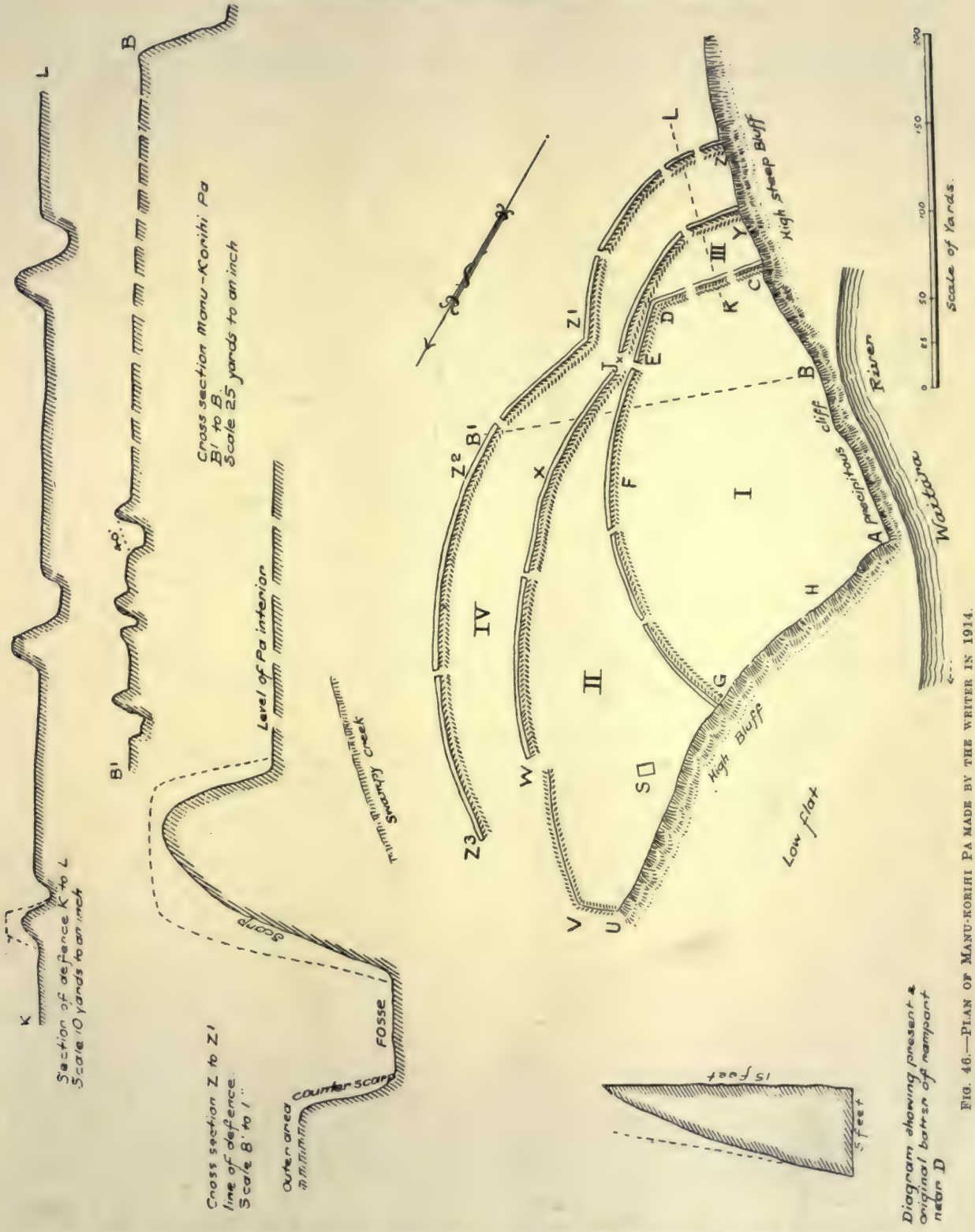

FIG. 46.—PLAN OF MANU-KORIHI PA MADE BY THE WRITER IN 1914.

bluffs, while the third and longest side of the triangle is protected by three lines of heavy earthworks, each of which encloses a residential area; the whole enclosed space is level land. All the advantages of a level residential area were combined with those of two steep bluffs for protection.

Proceeding from the point A, immediately above the bridge, along the river bluff to B, 100 yards distant, we find that the cliff is perpendicular and unscaleable. From B. on to Z it runs as a steep but negotiable bluff, doubtless surmounted by a stockade when the position was occupied, at which time the upper part of the cliff face would be scarped so as to present a vertical wall. Between B and C there was probably an entrance to the *pa*, with a track running up the bluff in a diagonal line from the river side. At the base of the bluff a narrow strip of low alluvial flat increases in width up stream. Shell refuse is seen on the slopes.

From C a line of earthwork defence extends 64 yards to N.N.E., ending at D. It is composed of a fosse with a heavy rampart or wall of earth superimposed on its inner side. The present bottom of the fosse is six feet wide at the cliff end, but widens out until it reaches a width of 16 ft. at D. The outer scarp of the fosse is 7 ft. in height, the inner or western one is 12 ft. at C, but increases to 15 ft. at D, though less in the middle, where much abrasion has taken place. These measurements include the inner rampart. A portion of the middle part of the wall seems to have been removed. At C the fosse is 30 ft. from brow to brow, and 40 ft. at D.

Continuing round the inner line of defence, at 44 yards from D we reach at E, an opening in the wall that was apparently one of the main entrances to the area marked I. From D to E the earth wall is still from 6 to 8 ft. above the level of the interior area. Outside this wall is a huge fosse with another wall or rampart on the top of the counter-scarp. From brow to brow of these walls across the fosse is about 50 ft. The fosse must have originally been 20 ft. wide at the bottom but is now rounded by the deposit of debris. On the inner side of the ditch the scarp or batter is 12 ft. high at the north end and 16 ft. near D, where the fosse is a little narrower. The abrasion and erosion of walls, as also the filling in of the fosse must be taken into consideration, hence the original scarp must have been fully 20 ft. in height. The outer scarp of the ditch at D is 13 ft. in height.

Proceeding from E to F the superimposed wall on the inner or western side of the fosse is 9 ft. above the interior level in the middle, but less at both ends. In this stretch no wall appears on the outer edge of the fosse, but that on the outer or eastern side of the D to E fosse swerves off at E to the north-east and runs in a curved line to the cliff head at U, thus enclosing the large area marked II.

The fosse from E to F has an outer scarp, or counter-scarp, of 8 ft., and an inner one of 16 ft. near the former point. Abrasion and filling in of the fosse has much impaired the regularity of parts of the defences. Brow to brow measurement at F is fully 30 ft. The outer area, II., is about 9 ft. below the interior defence.

At 23 yards from F is a break in the wall and the fosse is filled in opposite it. This may or may not be an original entrance. At a point 52 yards further on is another such break in the defences. From F to G the fosse gradually decreases in depth from 8 ft. to 4 ft., carrying a bottom width of 8 or 9 ft. No outer rampart exists on the E to G line. The inner scarp averages 10 ft. in height but is broken down in places, the wall on the inner side being from 5 ft to 8 ft. high. The enclosed area marked I within this defence is a fine level expanse about 210 yards by 130 to 200 yards, an admirable residential area, and yet marked by such tokens of old occupation as hut sites, store pits and waterworn stones used for domestic purposes. A race course has at some time been formed within this area. To such base uses has Manu-korihi sunk.

The site of this *pa* is a fine commanding one, from which is obtained a good view of the river, ocean and surrounding lands.

From A to U the position is bounded by a steep bluff doubtless steeply scarped in its upper part when the place was occupied. This bluff has evidently been a midden or place where refuse was thrown. The flat below has also been occupied in former times. Near

A are two small terraces cut out of the face of the bluff. This high bluff would be easily defended.

From U to V we follow the outer line of defence of area II. The wall is now 5 ft. and upwards in height, but the outer fosse has been filled up, presumably by the natives who still reside here just outside this defence.

At W occurs a break in the wall of about 30 ft., east of which break the wall continues, not in line with the V to W part, but some yards further north. The wall presents an outer scarp of 9 ft. to 11 ft., but considerable abrasion has taken place. From G across to W the distance is 120 yards. From W to X we find a curved line of defence consisting of a wall and outer ditch. This wall, which is much abraded, is now from 3 ft. to 6 ft. higher than the level interior area, and shows several gaps, one of which may possibly be an original entrance. Many such gaps or breaks in such defences are cattle tracks formed by trampling of stock. The ditch is 6 ft. deep at and near X and running out at W. The enclosure marked S in area II. is a modern burial ground. In some places there appear to be the remains of a parapet outside the ditch, though this matter is somewhat doubtful. The inner scarp of the ditch is from 11 ft. downwards in height. The ditch is 10 ft. to 12 ft. wide and contains much debris. This defence extends on past X to J where it is discontinued, and a gap of 30 ft. occurs opposite the entrance at E. The wall is then continued along the eastern side of the D-E fosse. There was probably a *ngutu* or double stockaded entrance passage at J-E. The ditch from X to J is deeper than heretofore and presents a small parapet or earth wall on the outer scarp, that scarp being 7 ft. in height and the inner one 12 ft., decreasing somewhat towards X and J. From brow to brow about 25 ft. The open space marked by a cross near J shows a curious rectangular area of 14 yards by 10 yards that has been raised, built up apparently in connection with the defence of the opening.

The wall from this entrance onward to Y is an extremely massive one, between it and the D-E wall is a huge fosse. Opposite D this outer wall ceases to run parallel to the inner one, it curves outward and southward to Y to enclose area III., ending at the top of the bluff. This wall is well preserved and its rounded top is from 6 ft. to 8 ft. wide. The brow to brow measurement where the two walls are parallel on the D-E line is from 40 ft. to 50 ft. The fosse here is from 15 ft. to 18 ft. wide at the bottom, its outer scarp is 15 ft. From D to Y the wall is 8 ft. to 9 ft. above the interior area, but has no fosse inside it; the fosse angles at D to follow the D-C wall. The D-E line of defence is extraordinarily heavy and stands as another of the many proofs that, in pre-gun days, defenders of forts occupied the tops of the earthern defensive ramparts. The gap marked in the J-Y wall is probably an old entrance. The outer scarp or face of this J to Y wall is yet steep and 12 ft. in height. From Y at the cliff head to the gap the outer ditch is deep and shows remains of a parapet on the top of the counter-scarp. Inner scarp, 16 ft.; outer scarp, 9 ft., though somewhat less at the two ends. Scarps present a very steep batter where protected by a growth of shrubs, lately destroyed by fire. From the gap onward to the J-E entrance, the outer scarp of the outer ditch is from 3 to 5 feet high.

From Y to Z the bluff is less precipitous than heretofore, the upper part bearing some appearance of having been steeply scarped for 12 ft. or 15 ft., indeed such must have been the case.

The outer defensive rampart enclosing the long area IV. starts from the cliff head at Z and shows three gaps ere it reaches Z1. One of these probably represents an original entrance, possibly the one nearest the bluff. This defence is a curved wall with an outer ditch, and it swings inward opposite E, where the enclosed area is only 30 yards wide. The height of the wall above the interior area is 8 ft. and under. The ditch outside it is wide at the northern end, being 12 ft. across the bottom, with a counter-scarp of 5 ft.

to 6 ft. and an inner scarp of 10 ft. to 15 ft. No exterior parapet. Towards the south end the inner scarp of the ditch is about 18 ft. but the ditch narrows; this is the outermost defence. The depth of detritus in the ditch and the abraded wall top have to be added to the 18 ft. in order to show former conditions; an extremely strong defence. At one place the wall is still 20 ft. high, that is the scarp, which includes the batter of the ditch and the superimposed wall.

The diagram illustrating the scarp batter near D shows how well preserved is the batter of this high scarp; indeed in some parts the lower part is yet steeper, having been preserved by a growth of bracken fern and shrubs. It is absolutely certain that much of the brow of the wall, that is the upper part of the scarp, has crumbled away, and it seems highly probable that the original batter of the scarp is more nearly shown by the dotted line on the diagram. A wall with a 25 ft. scarp of that batter would be practically unassailable in pre-gun days, when the defenders on the summit were attending to their business.

The outer scarp of the southern end of the fosse is 8 ft to 9 ft. in height, with a brow to brow span of over 30 ft. For some distance the top of the wall is even now 12 ft. above the outer area, a fact that would give defenders much advantage. The defensive works in this vicinity are unusually massive and extensive, also well preserved. They must have been truly imposing when intact, during the occupation of the place.

Proceeding along the terrace from Z to the S.E. for a distance of 55 yards, we come to a small fortified place that may have been a form of outwork, or a modern *pa* of late times. It is about 50 x 43 yards in size and is defended by ditch and bank.

From Z1 to Z2 the outer defence shows a wall 5 ft. above the level of area IV., with an outer fosse 9 ft. wide, showing an outer scarp of 5 ft. and an inner one of from 9 ft. to 12 ft. A gap at 72 yards from Z1 is probably modern. This work is continued on to Z3 where it comes to an abrupt end and beyond that no sign of defences are seen on this line. The continuation of these earthworks seem to have been destroyed, as Carrington's plan of 1842 shows them continued to the cliff head. A gap between Z2 and Z3 was possibly an entrance to area IV. The rampart along this section is from 6 ft. to 7 ft. above the level of the enclosed area. The swampy creek 50 yards outside this defence would represent a water supply. The ditch continues much the same, with a scarp of 15 ft. downwards, and a counter-scarp of 4 ft. to 6 ft. Outside Z3 and its vicinity are several apparently artificial mounds, the object of which is not clear. The outlying trench shown on Carrington's plan has apparently been filled and so effaced.

The cliff overhanging the river appears to be fully 70 ft. in height.

The defences of Manu-korihi include a large area, all of which is a level terrace and could be utilised as hut sites, etc. There is no waste ground from cliff head to outer wall. Unquestionably the place would accommodate several thousands of natives in times of stress; at other times many would live outside the defences, as is clearly shown by middens and other tokens. The defences at area III. end are much the best preserved and the more massive. The condition of some of these earthworks is most noteworthy when the friable nature of the soil is considered. Vegetation has preserved them, but fire and cattle are now working sad havoc with them.

Shell refuse is seen in the ditches and walls in the vicinity of area III.

The Manu-korihi *pa* was named after an ancestor of the local tribe (Ngati-Awa) who is said to have migrated from the Bay of Plenty district to Waitara ten generations ago. A local clan or subtribe of Ngati-Awa that occupied the Manu-korihi *pa* was known by the same name. Some of these folk are now living at the northern end of the *pa*, just outside the defences.

The heavier defences of Manu-korihi may be compared with those of pre-Roman earthworks in England, though some of the old British forts much exceed those of the Maori both in extent and in the dimensions of the ramparts.

The wall built by the Romans from sea to sea across Northumbria was 16 ft. in height and 8 ft. thick, with an outer fosse 10 ft. deep and 40 ft. from brow to brow. A few hundred yards south of the Roman wall was another fosse and earthen wall topped by a stockade.

Te Rewarewa Pa.

Situated at the mouth of the Wai-whakaiho river, right bank, Taranaki district.

In the rough plan given of this fortified place the scale employed is fifty yards to one inch. The *pa* is situated on a piece of rising ground in a bend of the river, and it is a very old place. The area is not level as a whole, but undulating. Fig. **47**, p. 136.

The area between R.S. and U.T. consists of a high lying piece of ground, hence its peculiar form. A line drawn from A through R to a point midway between U and T denotes the crest of the higher lying ground which has been taken advantage of by the men of old. On the eastern side of the S.T. face is a perpendicular cliff, at the foot of which flows the river. Proceeding northward from S, and on to J a flat area of land lies outside the defences at a lower level. On the western side the low ridge breaks down to a low lying river flat.

Commencing at the end facing the sea we find the A.J. line of defence to consist of a heavy rampart of earth, now nine to twelve feet in height, with a ditch three to four feet deep outside it. It must be remembered that all the earthen walls have suffered much by abrasion, the light friable soil lending itself to erosive influences. In like manner the ditches contain much debris, are often filled to a considerable extent by the erosive powers of wind and water, much aggravated in late times by the trampling of stock. The sward of grass now tends to protect the earthworks, except where animals break through the same on escarpments and other slopes. These remarks may be applied to a very large proportion of the old fortified positions of the North Island; the best preserved ones being such as were constructed in stiff clay soil or soft sandstone formation, and those that have become overgrown with scrub or forest growth.

At C is an entrance to the fort, and B is a ditch, now six feet deep, evidently formed as a protection to the inner area. It is probable that a stockade existed so as to form a narrow lane like entrance way from C to E where the inner area was gained. The D to G line is a bluff, and between this and A F was an outer inhabited area, a small fort in itself, protected on all sides by wall, ditch, stockade and bluff. Lines of stockades are, of course, no longer traceable, but they were evidently used, not only as outer and supplementary defences, but also the inner area would be divided into sections by such erections.

There was evidently a gateway at C and another at E. The area inside E is from five to twelve feet higher than that marked (*1*). From E to F extends a ditch six feet deep and fifty paces in length. There are signs of a superimposed wall along its eastern side, and of an inferior one on its western side.

The F to G line is a very wide ditch, a deep fosse, the original bottom of which was probably ten or twelve feet wide. On both sides of it are heavy earthen walls, that on the south side being now twelve feet high, that on the northern side presenting a face of nearly twenty feet. From brow to brow of these ramparts must have been a span of nearly fifty feet. These works end at the cliff brow at G, where the last five yards of the ditch have been excavated about ten feet deeper than the rest, unless this has been caused, or partially so, by erosion.

Within area (*1*) are seen old storage pits of the *rua kopiha* or *rua poka* type, well like pits, oblate or dome shaped, with a narrow entrance through which one descends into the chamber. We adopt the former name as being most explicit, as the latter term, *rua poka*, might be also applied to a cave store excavated in a bank or cliff. Also one hut site is still plainly marked, but most of such signs of former occupation have long been effaced.

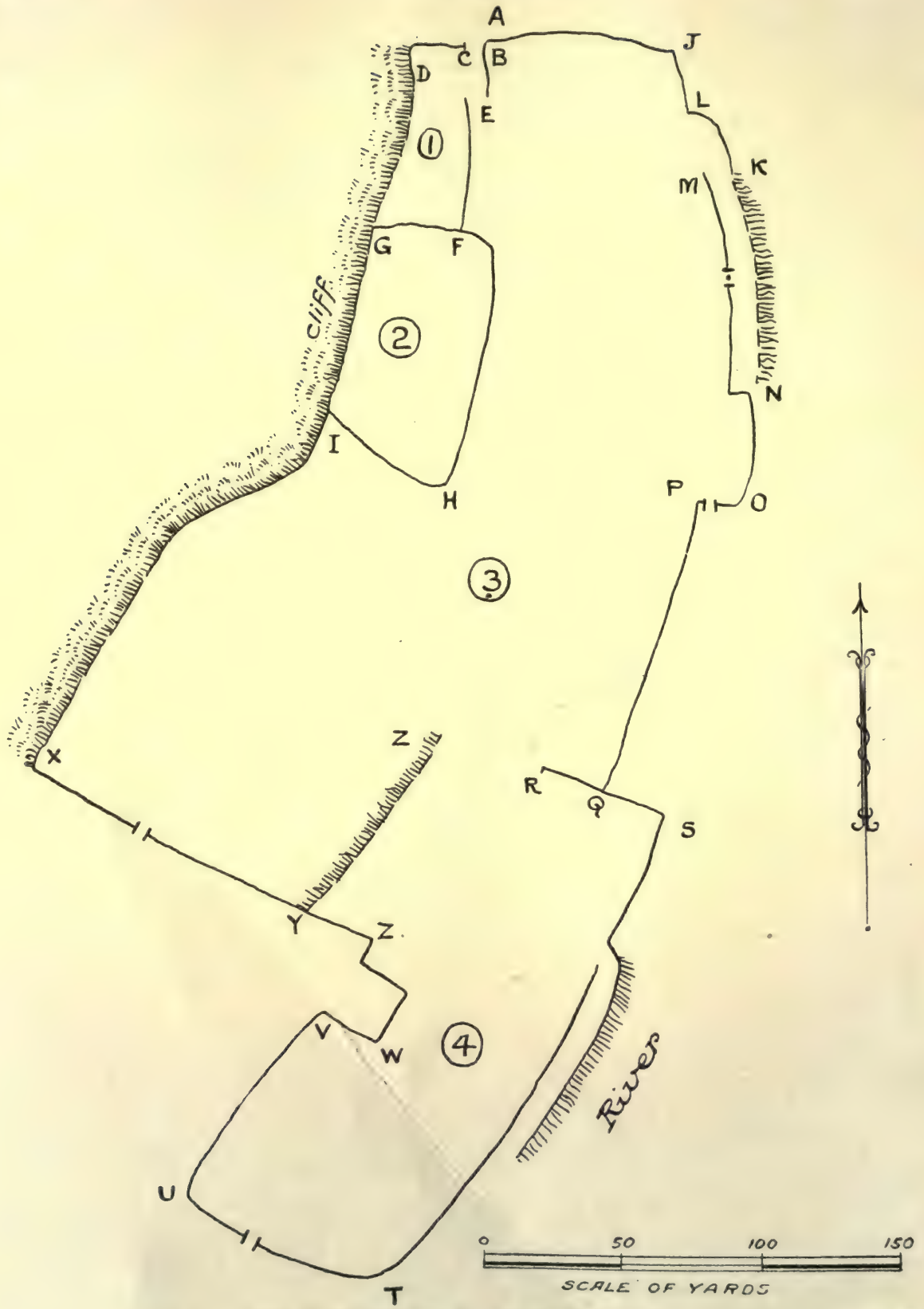

FIG. 47.—TE REWAREWA PA, NEAR NEW PLYMOUTH.
See p. 135.

[*Drawn by Miss E. Richardson.*

The butt of a post on the outer edge of the ditch may or may not be the last remnant of an old time stockade. It is apparently *totara* (*Podocarpus totara*).

From F to H we have a ditch ninety yards long, now much clogged with debris but still seven feet deep. There appears to have been an earthen wall along its inner side, but obliteration is overtaking it. From H to I runs a ditch from nine to fifteen feet deep, ending at I in a perpendicular cliff about fifty feet high. The trend of this defence is S.E. to N.W. On the southern side is a massive earthen parapet with a face of twelve to fifteen feet. The area marked (*2*) so enclosed by wall, ditch and cliff is almost level and shows hut sites and store pits. Here we see earthen ramparts yet six to nine feet above the level of the interior, which walls originally were probably ten to twelve feet high and twelve feet thick at the base. This was a strongly defended area, and it is evident that areas (*1*), (*2*) and (*4*) were extra strong places to which the people could retreat in the event of an enemy entering area (*3*). Water might have been obtained at the base of the cliff. Many large, flattened waterworn stones are seen scattered about, on which edible fern roots were doubtless pounded. The soil is excellent and well suited for cultivation; the terrace like flat east of K must have been utilised for that purpose. A few *Cordyline australis* are seen within area (*3*). The entrances to area (*2*) were apparently near the cliff at G and I.

Starting again from J and coming along the eastern face of the *pa* we find a slope or fall of the ground that has been taken advantage of. From J to K this slope has been scarped in order to form a defence. Curiously enough from L to M no sign of earthwork defences are seen, but outside that line is seen a steep slope down to the flat of about fifteen feet drop. It is not clear that there has been any scarping done on it, but there must have been a system of stockades here, including one along the curved line L K, and some form of *ngutu* or entrance passage. The slope or fall continues on southwards and has been followed by the lines of defence. The striated line K to N marks a steep natural fall to the lower flat, but shows no sign of human handiwork; probably a line of stockade ran along its crest.

From M to the angle near N is a distance of eighty paces. This has been scarped and a ditch extends most of the way with earthen walls on both sides of it. The outer wall is smaller than the inner one, and there may have been an entrance passage about the middle. It should here be observed that the entrance ways to these fortified places are by no means easy to locate in some cases, for the reason that cattle break a track across earthworks and, in friable soil, storm water cuts an opening through ramparts and deposits the debris in the ditches, to fill the latter and exasperate amateur archeologists.

The interior scarp of the M to N ditch is from eight to twelve feet high, which includes true escarpment plus the superimposed rampart. The ditch is much filled up with debris. Towards the northern end of this line the ditch runs out into a terrace.

The curious bastion like projection at N O presents an outer face of thirty-five paces, and is bounded by earthwork defences similar to those north of it. There was apparently an entrance through its southern end as shown.

From P to Q we have a scarped slope with a rampart on the western side, and the remains of a small one on the eastern side. The ditch between these works is filled up to a great extent. The inner scarp is now about eight feet in height, including the remains of the superimposed wall. The soil is of a very friable nature. Q to R shows a heavy wall with a ditch on either side and presenting a scarp of about twelve feet. The northern ditch is the wider.

From Q to S is seen a scarp only, no sign of a ditch. S to T presents a single scarp for some distance, and outside this the high ground breaks down abruptly to a low flat. The defensive work then opens out into two scarps with a terrace between, which terrace slopes downward at the end and has evidently formed the entrance way into area (*4*). The southern part of this line shows only the one defensive work.

T to U gives a scarped face with superimposed rampart and a ditch on the outer side. There may have been an entrance through this work. Apparently spoil from the ditch has been piled on the outer side thereof, but whether as a built up wall or not is by no means clear. Storage pits are noted in this fosse.

From U to V is a deep ditch with a scarp and superimposed wall on the eastern side presenting a face twelve feet in height, though considerable abrasion has taken place. The other side of the ditch also shows an earthen parapet.

These defences continue in much the same style. The blank space between R and Z was the connection between areas (*3*) and (*4*), formerly no doubt closed by a stockade pierced with a gateway. From Y to Z the face of the higher ground has been scarped and an earthen parapet constructed along the top of the scarp.

From V on to X extends a heavy earthwork with outer ditch, with an entrance passage as marked.

From X to I the defence runs along a steep fall away to the lower flat. This was probably scarped and provided with a stockade along the top of such escarpment, the erosion of generations having destroyed all evidence of artificial defence. The steep slope is from thirty to forty feet in height; further on it developes into a cliff. A small creek flows at the foot of this slope; this, together with the river flowing just east of T, and a small stream east of S, would provide the water supply of the *pa*. The sea beach lies a few hundred yards from the northern end of the defences.

Te Rewarewa is a fine specimen of an old time fortified place, the trend of the earthworks showing how well the Maori understood taking advantage of the natural formation of land, how he confined his inner defences to the higher ground and accepted the assistance of nature in scarping natural slopes and in the location of his ramparts and ditches; hence the peculiar form of many of our diagrams.

This *pa* would contain a great number of people, and is larger than most of the Taranaki forts examined. It would be an interesting task to endeavour to locate the various lines of stockades as they formerly existed, by means of spade work. It is quite possible that some of the post butts are still in position below the surface, or that their position could be detected.

There is no waste area within the defences, the whole of it being either level or presenting a gentle slope. The conspicuous rock column of Paritutu lies S.W. from here. A stone adze was found on one of the earthworks during the examination of the *pa*.

Mr. W. H. Skinner, who has published an interesting account of the capture of Te Rewarewa by the Taranaki tribe, in the *Journal of the Polynesian Society*, tells us that, early in the 19th century, it was occupied by Ngati-Tawirikura, a sub-division of the Atiawa tribe. Several hundreds of these folk were slain, some escaping by jumping over the high cliff near the T angle into the Wai-whakaiho river below. Among these was Honiana Te Puni who in later life was a much esteemed chief of the Atiawa village at Pito-one, Wellington.

An unfinished Pa at Waikohu.

A well constructed and commodious *pa*, Fig **48**, p. 139, is still in good preservation at Puha, Poverty Bay district. It is situated on the high left bank of the Waikohu river, near the school. The enclosed area is level land, is 240 yards long and in width varies somewhat, the average width being about 55 yards. Hut sites and pits are still in evidence, also the remains of an earthen wall dividing the area into two parts. The earthwork defences consist of a rampart on three sides, with an outer fosse. A second rampart outside this ditch has been formed in some parts but not at others. The river side was protected by a steep and high cliff. The main earthwork is now (1919) from three to six feet in height. The ditch is from three to six feet in depth; thus the outer scarp of the rampart ranges up to twelve feet in height. These earthworks are well preserved considering the nature of

the soil and the length of time during which the land has been under stock. When first seen by the writer, in the year 1874, these earthworks were in excellent preservation, and protected from erosion by a vigorous growth of fern (*Pteris*).

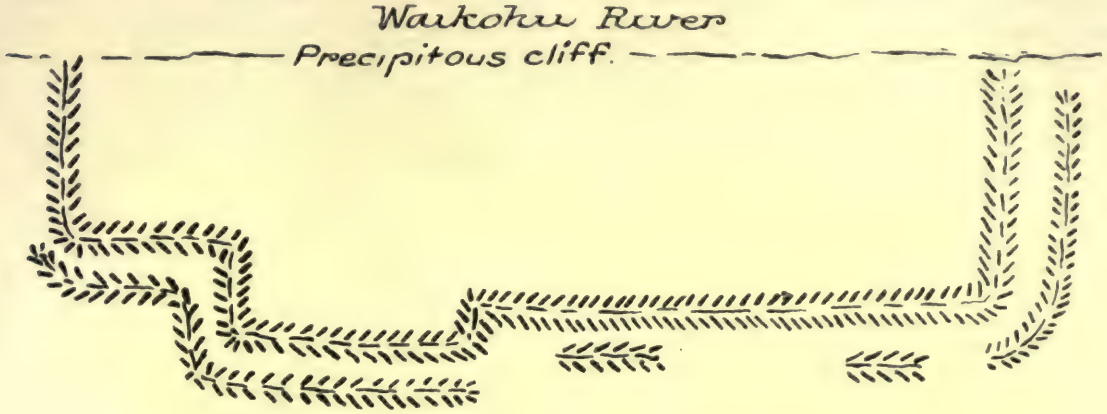

FIG. 48.—A PA AT WAIKOHU, APPARENTLY UNFINISHED.
See p. 138. [*Miss E. Richardson.*

Some distance below this *pa,* and a little way above the bridge, is another old *pa* on the right bank of the Waikohu river, and over-looking the creek at Puke-matai. This place has two ramparts of bulky earthworks heavier than those of the *pa* described above. It is probably a much older place. It is nearly opposite the Keke-paraoa *pa,* which is on the left bank of the Waikohu river, a short distance above the bridge. These fortified villages of old were occupied by the Nga Potiki clan. Old store pits on the ridge at Puke-matai show that *kumara* grown on the flats were carried up there for storage.

Within the first mentioned of these three forts we found a small bone flute, made from a human arm bone, also a metal spoon; that was in 1874.

HILL FORTS.

FORTS SITUATED ON ISOLATED HILLS, PEAKS, AND HIGH-LYING RIDGE SUMMITS.

A great number of old forts come under this heading, of which are given descriptions of several types, while yet others, consisting of terrace formations only, and showing no defensive system of rampart and fosse, are described under the heading of Terraced Hill Forts. Most of the old forts are situated on hills, but are described in this paper under different headings, according to the situation and defensive methods.

DESCRIPTION OF OTUMATUA PA, TARANAKI DISTRICT.

The following notes on an old time *pa* of the Taranaki district were written by Mr. W. H. Skinner, and published in vol. 20 of the *Journal of the Polynesian Society*:—

"It is now proposed to describe in detail, so far as we are able, a typical ancient fort, and for this purpose have selected the Otumatua *pa,* a stronghold of the fighting Ngati-Tama tribe of Northern Taranaki. This *pa,* a plan of which accompanies this article (see Fig. **49**, p. 140), is situated on the sea coast about one mile south of Puke-aruhe..... The summit of this *pa* commanded the most comprehensive view of the coast line of any of the numerous *pa* along the coastal belt.....

"The *pa* of Otumatua is situated on an isolated hill or dyke, rising from the sea cliffs which here drop sheer into deep water, to a height of about 220 feet above sea level, and eighty to one hundred feet above the general level of the surrounding country, from which it is separated by a shallow valley. The hill has been scarped out as usual, with terraces on which were built the houses, the principal chief and his family occupying the summit (*tihi* or *toi*), and which was the stronghold or keep of the *pa*. It is possible that on the flat summit, which measures about fifty yards by twenty yards, was also situated the *marae* or open plaza of the town, where meetings of the tribe were held to discuss important questions: where guests were received, and returning war parties were welcomed; and all important functions held.

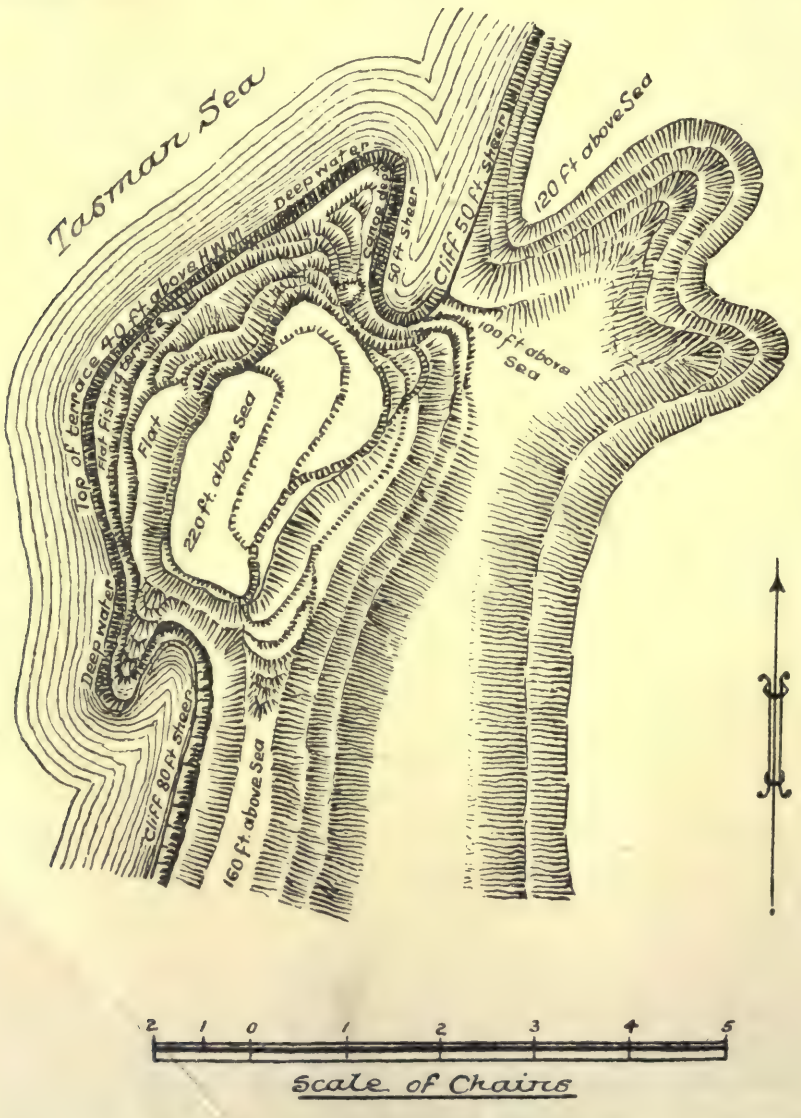

FIG. 49.—PLAN OF OTUMATUA PA, TARANAKI.

[*After Skinner.*

"Each terrace was protected by wooden palisades made of the stems of trees of a considerable size firmly secured together by cross beams by means of lashings made of the *aka* vines of the forest, with here and there larger posts, named *tumu*, prepared with more care, and which projected above the line of palisades, being carved with conventionalised human figures of the ordinary kind, hideous in appearance.

"In the outside line of palisades there were gateways here and there, called *waharoa** which could be closed at will, and were so arranged that no direct attack could be made on them, for they were defended by short, outside, semi-detached lines of palisading directly in front of the gateway, obliging anyone entering to approach the gate from right or left, and this exposing them to the spear thrusts of those inside the main palisading. The main gateway and entrance to Otumatua was at its north east angle, and at the lowest point of the outworks of the *pa*, and close to the edge of the sea cliff near to the spot marked '100 feet above sea' on plan, the approach being between the curved outlying double bank and trench (palisaded), as shown on sketch. It will be seen at once that the site selected for the main gateway was well chosen as being most difficult for an assaulting party to gain an entrance from here to the *tihi* or citadel, and as lending itself for defence at many points along the line or passage way up to the *tihi*. This passage way skirted along the bottom of the northern face of the *pa*, a very steep, almost perpendicular hillside, forty to fifty feet high, and the edge of the sheer sea cliff. Projecting over and commanding this passage way from above would be the *taumaihi*, or fighting stages, well stored with stones of various sizes for hurling down upon the heads of enemies, should they succeed in gaining an entrance through the main gateway. These *taumaihi* were also built at suitable angles and projections of the outworks of the *pa*, and were a special feature of the fighting *pa* of the mid-Taranaki tribes.

"The inner palisades were provided with openings for passage, which were barred with a low line of palisades, *pua kainga*, over which the inhabitants passed by means of short notched logs placed on the slant like ladders.

"In nearly all *pa* the water supply was usually a matter of difficulty, and it was the first aim of the besiegers to cut off this supply, and thus reduce the besieged *pa* to terms. Many a tale is told of the extremities to which forts have been reduced on this account.

"In the case of Otumatua, however, the people luckily possessed a never failing spring of water running out of the seaward slope of the hill within the *pa*. The water was led into, and collected in basins hewn out of the hard sandstone rock upon which the *pa* rests.

"The terraces on the top of which the palisades were erected, are of varying heights, ranging from about fifteen to twenty feet in the main walls, to from six to ten feet in those of minor importance lying within the greater outworks, and were originally almost perpendicular. Outside the principal lines of palisades, at the base of the scarps, deep ditches were dug, which added immensely to the strength of the defences. In some well known *pa* these fosses are of enormous size, causing wonder at the amount of work executed by aid of the old wooden *ko*, or spade, often in a soil so hard that Europeans would be obliged to use pickaxes in excavating them. The palisades themselves were sometimes erected on a bank a few feet high, running along the top of the terraces.

"On the upper terrace would be the council house, used also as a guest's house, besides the houses of the principal families of the *pa*.....The closely related families lived together, usually within a sub-enclosure within the *pa*, in which were frequently several houses. Near each families' quarters were the underground *rua*, or pits, in which the *kumara* and other stores were preserved. These pits are a prominent feature in all Taranaki *pa*. They were usually six to eight feet deep, and eight to ten feet wide at the bottom, but narrowing upwards to the entrance, which was about two feet square, lined with slabs of the fibrous matter cut from the *whcki* tree fern, which would certainly last over one hundred years. It was only the square upper part of the pit that was so lined to a depth of eighteen inches or two feet. The pit mouth was covered with slabs of the same tree fern. Sometimes the storehouses were sunk in the ground three or four feet, and the whole covered with a Λ shaped roof made of slabs,

*The *waharoa* was a narrow passage that extended from the gateway to the interior of the *pa*. The gateway was called *kuwaha*.—E.B.

and outside them a covering of earth. Again, there would be other kinds of storehouses (*pataka*) built on piles, sometimes on tree trunks twenty feet in the air, frequently very handsomely carved and painted red with *kokowai*, or oxide of iron. In these were stored arms, utensils, fishing nets, and other valuable property. The people of the Taranaki coast, however, did not excel in house carving, like the tribes of the East Coast.

"On the lower terraces of the *pa*, near the sea, would be seen long lines of stages or racks, *whata mango*, on which were dried the sharks to serve as winter provisions. It is somewhat difficult to estimate what the population of a *pa* of this size would be. If we say from five to seven hundred it would probably be about the mark. This number would, of course, be greatly increased in time of war, when all those who lived at their distant cultivations would be gathered into the fort.

"All signs of houses, palisading, or other woodwork having disappeared from Otumatua, it is impossible now to give the sites of certain particular parts of a *pa*, such as obtained in all of them; but we give below a description of a few features that were common to all *pa* formerly.

"The main gateway of a *pa* was in the outer line of palisades,* and was usually handsomely carved. From it a main street, or way, often very narrow, led through the *pa*, and this was called the *riuroa*. There were narrow cross ways leading from the *riuroa*, to give access to other parts, which were called *riuroa mataiti*, and from these access to the different divisions of the *pa*, where the family groups lived, was secured through the sub-palisading by stiles, called *pua kainga*, with steps cut in inclined logs. The double palisading often found, especially in modern times, on the outside defences, was called *aparua*, and the outside and lowest of all the lines of palisading was called *pekerangi;* the inside one in the double line was the *kiritangata*. The wall was called *parepare* (*maioro* in the older form of *pa*), and the narrow space between the *kiritangata* and *parepare* was the *taitai*. The usual slope or glacis outside the *pekerangi* was called *tahitahi*. In modern fortifications, where the double line of palisades was used, the latter were pierced for firing through, and these apertures were called *whakarua-kotare*. The top of the *parepare*, or bank, on which the two lines of palisades stood, was called the *huka*. The gateways were supported by huge posts, carved and painted, called *tukuaru*, and the tall posts projecting above the palisades, and generally carved with grotesque heads, were called *tumu*.....

"Near the residence of the *tohunga*, or priest, was a small enclosure fenced around with high posts, in which was an erection called *Te Pou tapu*, in the form of a canoe, and fixed in the ground. This was the sacred place of the *pa*, the *tuahu tapatai*, sacred altar; into this enclosure only the priest entered, except when for any purpose some one of the people desired the aid of the priest; under such circumstances he was allowed within whilst the incantations or ceremonies were going on.....It was from this sacred enclosure that the priest addressed the people when the will of the gods required to be made known.

"There was also a latrine provided in a *pa*, usually called the *paepae whakariro*, or *paepae hamuti*, also *paepae o Whaitiri*, etc., with which were concerned some important ceremonies of initiation. A tree projecting out over an out of the way corner of the fortification, or over the edge of the cliff on which the fort stood, was often selected or used as the latrine.

"In many *pa*, particularly those situated in more or less flat country, there was a high tower of wood erected near the main entrance, called a *taumaihi*, from which the watchman could observe the approach of anyone. These towers had two or three, sometimes more, stories floored with poles, and large quantities of stones were stored on them to cast down on an enemy.

"The cooking houses were kept separate from the living houses, for all food was considered contaminating, and a defilement to the *tapu* of the dwelling. These cooking houses were called *kauta*, and were roofed sheds with open sides, but, as the firewood was stored along the open parts, it formed rough walls when the place was fully stocked with wood."

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*Not always so.—E.B.

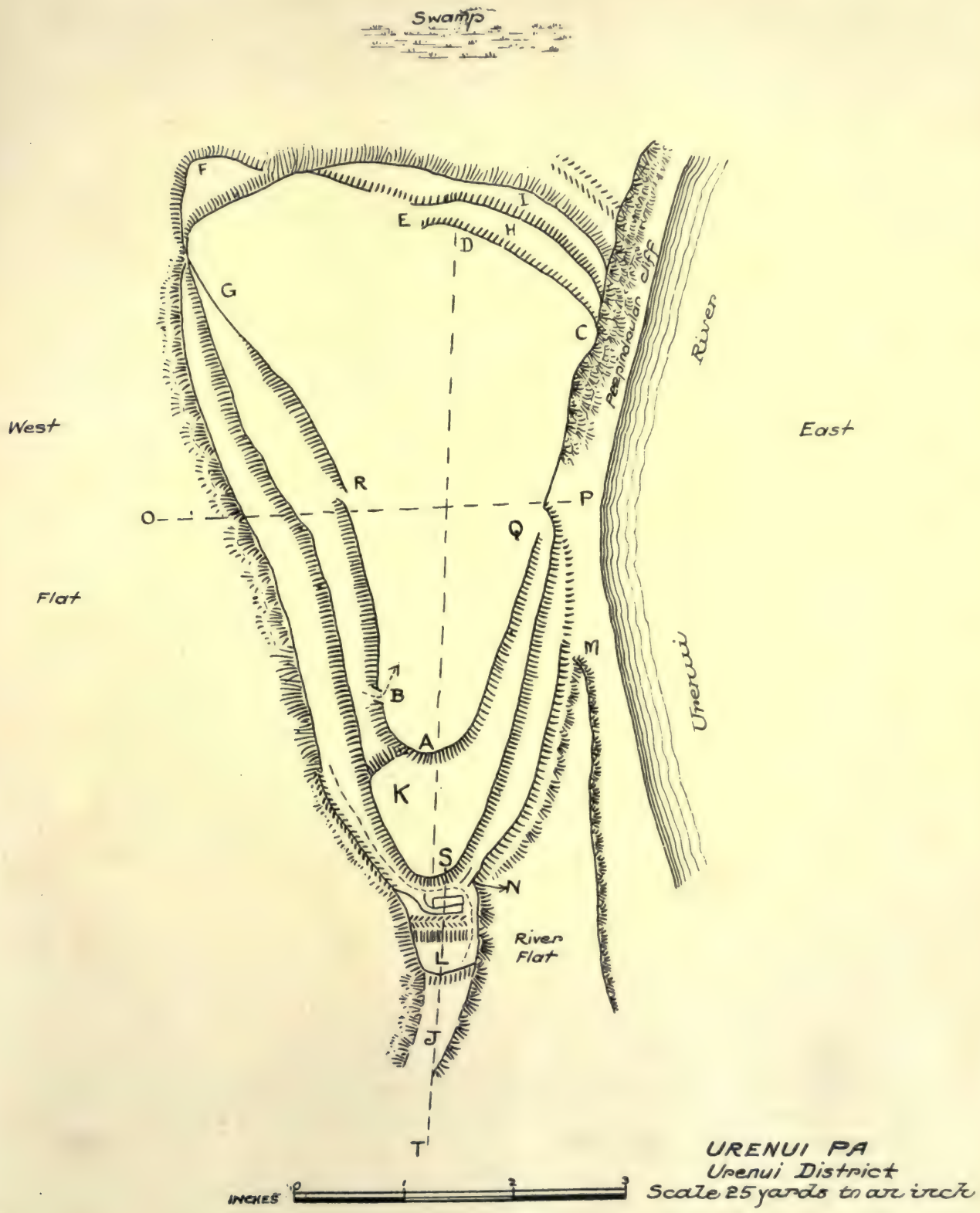


FIG. 50.—URENUI PA, TARANAKI.

See p. 144.

[*Miss E. Richardson.*

In his account of the storming of the Rewarewa *pa* near New Plymouth, Mr. Skinner speaks of the gateway having been closed by a heavy piece of wood that was slid into position.

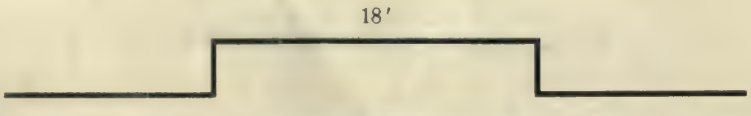
Mr. Grace speaks of the entrance to a *pa* at the gateway as being four feet square and two or three feet from the ground, made so that an intruder could be easily knocked on the head as he entered in a stooping posture.

The Urenui Pa.

This is one of the very old forts of the Urenui district. It is an isolated hill of elongated form standing on the right bank of the Urenui river, fortified by means of escarpments, ditches and ramparts, to which must be added the numerous lines of stockades that formerly stood on the scarped faces and other positions. See Fig. **50**, p. 143. The river flows at the eastern base of the hill; the southern end of this eastern face of the hill being a steep bluff, while the northern end is a perpendicular cliff in its upper parts. A considerable part of this face at the northern end slipped into the river some years ago. This *pa* is very much larger than Pohokura near by, and of a more interesting type, as also much better preserved. The summit of the hill is a comparatively level area, having doubtless been levelled artifically to some extent —an easy task in this loose friable soil. The upper parts of the western side and the north and south ends have been formed into terraces for occupation, below which run heavy earthwork defences. The southern end of the eastern side also shows two terraces. The heaviest defences are those at the south end of the hill where the main entrance seems to have been situated. The hill carries steep slopes all round except at the southern end where a narrow spur runs down to the flat. See J on plan.

Leaving the level of the flat at the southern end we advance up the gently sloping spur to the first scarp, the outer line of the terrace marked L, the base of which is about 17 ft. above our starting point. Terrace L is but about 6 yds. across, and has evidently been a small residential area; it is connected with the ditch opposite N by an upward sloping road 8 ft. wide. The inner end of this terrace is marked by a high scarp of 14 ft. in height. This defence is comprised of the steep batter left when the terrace was formed and a superimposed earthen rampart. Inside this wall, and west of the entrance passage is a short fosse 6 ft. deep running across the spur and on along the western side of the hill. On the inner side of this ditch is a rampart 10 ft. high, 9 ft. wide and 15 ft. long, a solid block of earth and soft stone left when the fosses were formed, and inside of which is a deep fosse 7 ft. wide that connects with the one running round the western side of the hill. The entrance passage or lane from terrace L runs into this inner fosse, and this was evidently the main entrance to the *pa*, so that any persons entering the place had to pass through this fosse, which has a ten-foot wall on the outer side, and a practically perpendicular scarp of at least 16 feet on the inner side. Any enemy attempting to enter by this narrow passage would be at the mercy of the defenders stationed on the summit of the inner scarp 16 ft. or 18 ft. above them. The dotted line shows so much of the entrance passage to the *pa* as can be now recognised, the western terraces being much broken down by stock at this end of the hill. The old entrance to the uppermost area at B is plain.

At the eastern end of the inner fosse opposite N is a sudden drop to a short ditch at the southern end of the terrace extending round the eastern side of the hill. The continuation of the fosse round the western side is also lower than that part between the two walls, a longitudinal section of which would be thus



This higher part is *papa* rock, which is possibly the reason why it was not excavated further.

FIG. 51.—URENUI PA. VIEW OF WESTERN FACE.

See p. 146.

[*Photo by Augustus Hamilton.*

The ditch or fosse running round the western side as part of its outermost work runs first at about 40 ft. above the flat, but rises as it advances, then sinks to rise again in sympathy with the contour of the hill. Most of the way it shows an outer wall, but at certain places no wall is seen and much abrasion has occurred. Below this outer work is an easy slope to the flat below. See Fig. **51**, p. 145. F represents a lone triangular terrace cut out of the point of the hill, with an inner scarp of 20 ft. almost perpendicular, at the foot of which is a ditch.

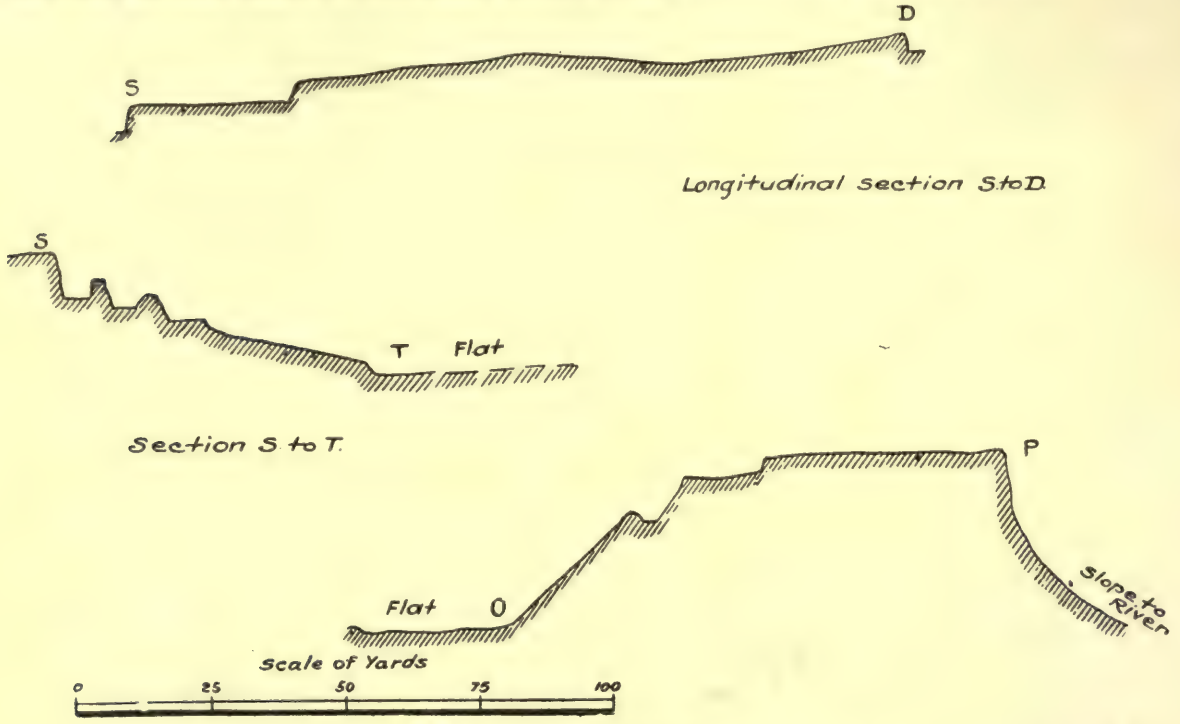


FIG. 52.—URENUI PA. LONGITUDINAL AND CROSS SECTIONS.

[*Miss E. Richardson.*

The cross section of the *pa* (Fig. **52**, above) between O and P will help the reader to grasp the aspect of these defences.

Harking back to the south end of the hill fort we find an almost perpendicular scarp of 16 feet on the inner side of the deep fosse that served as an entrance passage. Ascending this we find ourselves on the terrace K that has been formed at the end of the ridge. This terrace continues in a narrow form round the eastern side to Q where it rises to the level of the summit area and was evidently a means of access to the same. On the west side the K terrace drops abruptly 8 ft. to the upper terrace on the western side. This terrace commences to rise at 33 yds. from the starting point in sympathy with the rise of the summit of the ridge, and also of the lower work. At 60 yds. it has risen 20 ft. and carries a width of from 12 ft. to 18 ft., but then widens out to 30 ft., then to 40 ft., a fine flat terrace with an inner scarp of 7 ft. Further on the terrace narrows and descends a little, having an inner scarp of 8 ft. to 10 ft., and then runs out near G. This terrace is a fine residential area and, judging from the amount of shell refuse on the lower slope, probably accommodated many cooking sheds. Storage pits of the *rua kopiha* type are also numerous, many being formed under the inner scarp in order to economise space. A very noticeable feature in all middens of these *pa* of the Urenui district is the diminutive size of vast numbers of *pipi* shells. At R is plainly seen an ascending passage by which access was gained to the summit of the ridge. The summit and much of the slopes are covered with a fine growth of small trees, as *kowhai, mahoe, rewarewa, kawakawa* and *wharangi.* The site is a commanding one, and affords a fine view of sea and land.

The terrace running from K to Q is about 20 ft. wide in its widest part but narrows as it rises to Q. North of this is a perpendicular cliff of from 30 ft. to 60 ft. on the eastern side, below which the talus slopes down to the river far below. There is a considerable growth of noxious weeds on the hill, but many tokens of former occupation are discernible. Sixteen species of ferns were collected here by Mr. W. W. Smith.

A spring at the foot of the spur below F was probably one of the water supplies of this place.

In this *pa* are seen two illustrations of a sudden drop of 8 ft. in the level of terraces, either intended as an additional defence (in conjunction with a stockade), or in order to take advantage of slope formation.

The cross and longitudinal sections given tend to illustrate the defensive works better than a written description. Also we must imagine lines of stockades along the crests of all scarps.

The terrace marked I shows an outer wall or rampart in places, and its eastern end for 30 yards assumes the form of a ditch with heavy outer rampart, while below it is another fosse and rampart, these extra defences at this part being necessary on account of a spur here running down to the flat.

The scarp at A is 11 ft. high, the K area being an easily defended one on its outer lines. The S to D line is approximately S.E. by S. to N.W. by N.

The old road to Puke-aruhe military station, made by the Armed Constabulary long years ago, runs round the western base of this hill.

The inhabitants of this and other forts of the district possessed very fine lands for cropping purposes and must have grown large quantities of sweet potatoes. The sea and tidal river would also yield abundant food supplies.

The trees found growing on this old fortified place are:—

Kowhai = *Sophora tetraptera*
Mahoe = *Melicytus ramiflorus*
Rewarewa = *Knightia excelsa*
Kawakawa = *Piper excelsum*
Wharangi = *Brachyglottis repanda.*

Okoare.

This interesting old fort (Fig. **53**, p. 148) is a very good illustration of the *pa maori*, and of the methods adopted in fortifying hill positions. It is situated near the town of New Plymouth, about two miles to the S.S.W. thereof. The hill on which it has been constructed is almost an isolated one, being connected with the high lying lands to the S.W. merely by a low saddle. The ridge-like summit of the hill lies nearly east and west, and it affords a fine view of the surrounding country and the ocean, the lone peak of Paritutu bearing N.W.

The outer defences of this position have consisted of steep scarps surmounted by stockades or superimposed walls and, in some parts, having a ditch at the base with an earthen rampart outside it. The ridge summit has also been divided into five distinct areas, as shown in the sketch, by means of escarpments, ditches and walls. Fosse and rampart play an important part in these defences, more so than in many of the hill forts of Taranaki, as is seen in the cases of the Okoki and Urenui forts, where the scarped terrace system was adopted. Okoare is remarkable for the great number of storage pits within its defences, most of which are of the well-like *rua kopiha* type.

From A to B runs the outermost line of defence at the eastern extremity of the ridge summit, and from which the ridge breaks down to a lower ridge, thence to a flat ten chains to the eastward. The A B defence consists of a steep scarp now six to nine feet high, with a fosse outside it, now much filled with detritus from the scarp. An apparent entrance is marked on the sketch. There is no sign of a superimposed wall on the top of the scarp. It was probably sur-

mounted by a stockade. The B C flank of area (*1*) shows a steep scarp and then an abrupt fall to a swampy stream over one hundred feet below. Such steep scarps, with no fosse at the base, or outer rampart, have assuredly been surmounted by stockades.

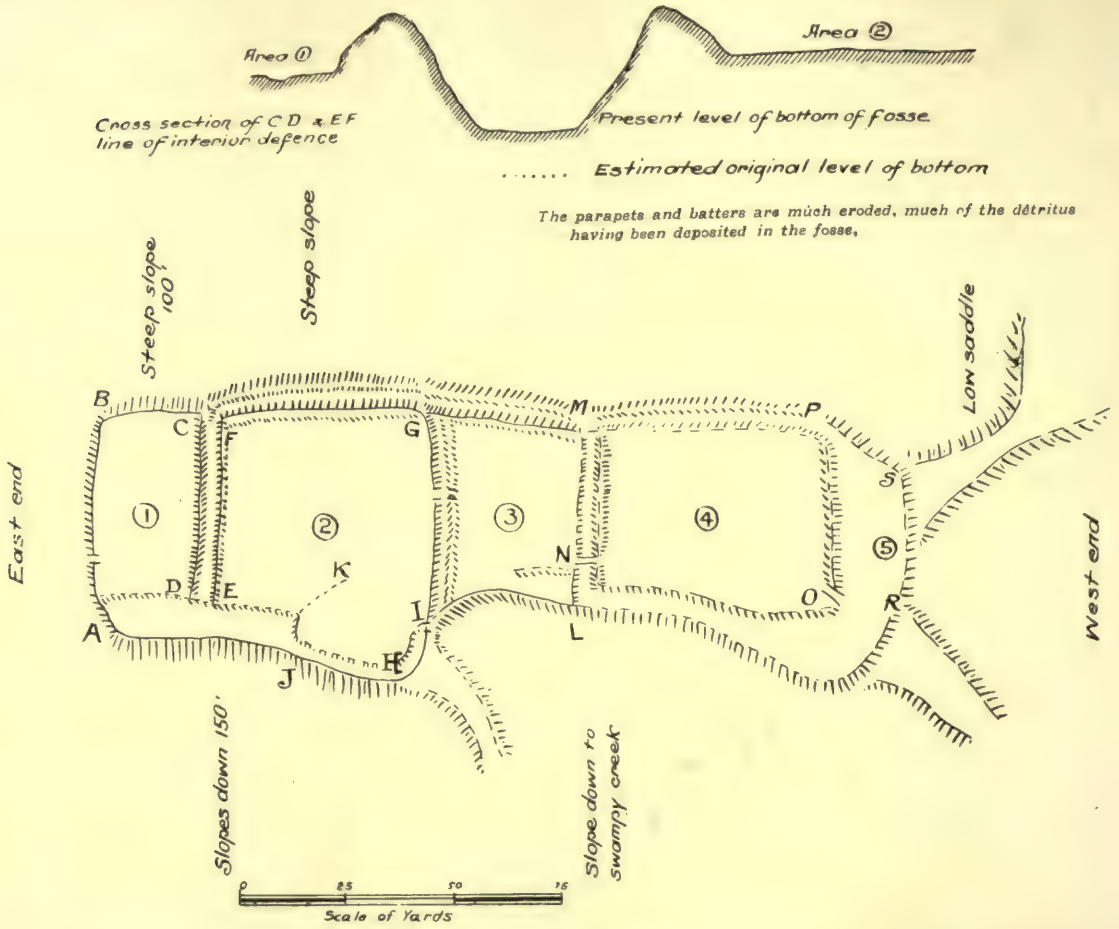


FIG. 53.—OKOARE PA. TARANAKI.

[*Miss E. Richardson.*

The C D line of defence between areas (*1*) and (*2*) is marked by a fosse eight feet wide and now five feet in depth; originally it was probably three feet deeper. Along the eastern side of this fosse runs an earthen rampart now four feet high. Area (*1*) shows no storage pits and it was probably a residential area only. The west side of the ditch, as shown by E F, presents a scarp or batter of about nine feet, owing to a superimposed wall, or parapet, now considerably abraded, on the west side. Thus this inner defence consisted of a fosse with a rampart on each side of it. Scarp and counterscarp were probably not less than fourteen feet in height.

It would be interesting to open up the parapet like walls in order to ascertain, if possible, whether or not they were surmounted by stockades. Stockades were so situated in many cases, as we know by finding the post butts in the ground, though in other cases high ramparts or walls were built up on which no stockade was employed, the defenders manning the top of the wall. This was probably the case in such defences as the huge walls at the inland end of the Manu-korihi *pa*, at Waitara. At the same time we must remember that, in some cases, ramparts were so formed as to be wide enough on the top to accommodate defenders, who took their stand behind a stockade. Such a mode of defence must have necessitated a very wide topped rampart.

From F to G is a stretch of forty-nine yards, which is protected by a scarp eleven feet high at F, and falling to seven feet at G. Along the base of this scarp runs a continuation of the E F fosse which is here contained by an outer parapet, now much eroded, from one to five feet in height. There has apparently been a parapet along the top of the escarpment which, prior to the action of abrasion and erosion during the past three generations or so, must have been a formidable face to escalade, as it was presumably surmounted by a stockade. The east and south sides of these inner defences show no sign of entrance passages. There would probably be a line of stockade on the outer wall or parapet.

In this, as in most other hill forts, the more or less steep fall of the ground without the outermost defences was really an important additional defence, when we consider the remarkable absence of missile weapons in Maori warfare. The only two forms of missiles used in the attack and defence of such places were stones and spears. The former were cast by hand and were more effective as used in the defence than in the attack of a fort, more especially hill forts, as most *pa* were. The use of the sling in hurling stones is not quite proved as a Maori usage in warfare. The late Colonel McDonnell stated that it was so used; so also have several natives, but it does not appear to be mentioned in traditions. *Kotaha, maka* and *tipao* are names for it given by natives, so that it may have been used in olden times, though apparently not extensively. Early voyagers do not seem to have noted its use. It was a common practice in Polynesia, and manufactured sling stones have been found at Sunday Island, 600 miles from New Zealand. Had it been a common usage here then we would assuredly know more about it. The sling proper was probably not used by the Maori, but he had other ways of casting stones.

The whip thrown spear was used both in attack and defence, but was presumably not very effective. There must have been considerable lack of precision in its use. Moreover, the actual site of a *pa* and its immediate surroundings only had to be considered with regard to an attack. A hill of greater altitude commanding the site and but two or three hundred yards away was a negligible quantity and proclaimed no danger.

On the northern side of areas (*1*) and (*2*) may be noted the break down to a terrace extending in varying width from A to I, outside of which the ground falls steeply to a fine cultivatable area far below, showing good soil and lying well to the sun. Beyond this lies a creek. The outer edge of the fringing terrace above mentioned has been steeply scarped but affords no evidence of a parapet or superimposed wall, evidently this was stockaded. From A to J this terrace is about thirty feet wide. The scarp of the upper area from E to K shows a continuation of the high scarp already described, with a ditch at its base and a rampart on the outer edge of the ditch. The scarp is now some nine feet in height from the present bottom of the ditch, which contains much detritus. It was originally probably a scarp of ten feet with a stockade on the top, which would add certainly eight feet, and probably more, to the height of the defence, no slight obstacle to an assault. Signs of occupation are seen on the terrace.

Opposite J commences a bastion like projection of the higher area that juts out northward some twenty feet, conforming with the configuration of the hill and slopes. From J to I the terrace is about fifteen feet wide. In the corner of the terrace opposite J was probably a small entrance passage to the upper area. The inner scarp of the terrace follows a curve of the ridge round to I where there has apparently been an entrance. Between H and I a narrow spur runs down to the swampy creek, and presents a few hut sites in a position undefended by any earthworks. Between I and G was a passage entrance between areas (*2*) and (*3*).

From E to F is the highest part of the *pa*, and from here to the western end of area (*2*) the ground descends somewhat, though all of an even surface and available for occupation. This *pa* is a good illustration of how a rounded ridge, or hill with a longitudinally sloping summit, was levelled into areas of different altitudes. This uppermost area, or *tihi*, as a native would term it, shows many store pits of the *rua kopiha* type, while area (*1*) was merely a residential one.

A ditch across the ridge from I to G is now about four feet deep at its northern end and nine feet at the southern end. On the eastern side of its southern part is a small parapet, probably much abraded, and on the western side a much more pronounced one. The ditch is eighteen feet from brow to brow.

Across the ridge from L to M runs a fosse seven feet deep, with a low parapet three feet in height on its western side, as also a ridge like mound on its eastern side. This latter, however, is not situated on the top of the scarp but lies ten feet back from it. The fosse is ten feet from brow to brow for some distance, but much wider at the south end.

Area (*3*) includes many store pits, some of them apparently small semi-subterranean ones of the *rua tahuhu* type, while others are the well like pits with direct entrance from the surface.

This area (*3*) is fairly level, and is on the same plane as area (*4*). The probable passage between them is marked on the sketch.

From G to M is a continuation of the inner scarp with a superimposed wall or parapet; the latter being about five feet in height at the west end, though broken away at the eastern end. A ditch runs along the base of the scarp, which is eight to ten feet high. The remains of a parapet are seen outside the ditch, now nearly obliterated by a crumbling down process and the filling of the ditch with detritus. At M the ditch is twenty feet from brow to brow. Below these defences the ground falls away to the swampy low ground on the southern side of the hill. This southern slope shows hut sites; it being a common custom for natives to live outside a fortified position in peaceful times.

The curved line from I to L presents the inner scarp at its western end but no such work at the eastern end. The terrace shown on this side must have possessed a stockade as an outer defence, with probably another on the top of the inner scarp. At N there appears to have been a communicating passage between areas (*3*) and (*4*). At L the terrace was originally about twelve yards wide, narrowing somewhat to east and west. At the bottom of the hill on this side is a swampy creek.

No. (*4*) area contains many store pits. On its southern side the defences are the same as in area (*3*), but the parapet is much abraded in parts. At P the inner scarp is about twelve feet, on the top of which is a parapet four feet in height. The parapet or rampart outside the ditch has almost disappeared. In some places the scarp and its superimposed wall show that originally the steep batter face must have been twenty feet in height. There was probably an entrance passage at O. So numerous are the food storage pits in these parts of the fortified area that they must have interfered seriously with space for dwelling huts, unless they were inside the cooking sheds. This latter arrangement, we know from Dr. Marshall's work, was a Taranaki usage. Opposite O a spur leading down to the swamp has terraced hut sites on it.

Throughout this position much levelling, scarping and terracing have been done. Hut sites are numerous on the terrace along the northern side; the Maori fully appreciating a sunny position. At R there appears to have been a graded approach from the spur to the terraced area (*5*). This latter area has been converted into a habitable space by means of making many small terracings to serve as hut sites. Apparently it was a residential area like No. (*1*), the numerous pits being in the three intermediate areas. From R to S runs a steep scarp still ten feet in height. Other hut sites are seen outside this defence, on the steep slope of the hill and on the spur below S. The northern and southern ends of area (*5*) were defended by a scarped face and doubtless the usual stockade. To the west of the fort is a patch of the original bush still existing in the gullies.

Okoare, like most of the Taranaki native forts, is small in area, but is a very fine specimen of a *pa*. It is said to have been built by a section of the Taranaki tribe that overran this district and occupied it for some time, being afterwards expelled by Ngati-Awa, its original possessors.

Two notable features of the Okoare *pa* defences are the earthen wall or parapet on the top of a scarped face, and the fosses having ramparts on both sides, as also a fosse and rampart at the base of a scarped face.

Te Koru Pa.

This old fort is situated on the left bank of the Oakura river, south of New Plymouth, the site being a similar one to that of Okoki, though the saddle connecting the hill with the parent ridge is much lower. The small elongated hill which forms the fort is almost surrounded by the river, and cliffs on both sides have much assisted the folk who planned the defences. That extending from A to D is a sheer cliff for most of its length, and from 16 ft. up to 60 ft. or so in height. It was apparently the outermost defence on that side, the lower area inside B,C being a low alluvial flat but a few feet above the level of the river. This flat was probably a residential area or used as a cultivation ground, its stone faced outer scarps being the confining bank of the river.

The whole area of the fort is covered with a dense growth of light bush, seemingly a younger growth than that of Okoki. It is composed principally of *rewarewa, kohe, wharangi, karaka, tawhero, mapau, mahoe, hangehange* and *Cordyline*, with a fine growth of *mamaku* and *Hemitelia* tree ferns. The dense undergrowth renders exploration and measurement a somewhat tedious task, but the plan given affords a fair illustration of the form and defences of this primitive stronghold. A photograph of Te Koru shows nought but the dense forest growth (see Fig. **54**, p. 152) among which appear the great fronds of many lofty tree ferns. This view is from the right of the plan. The series of terraces is a remarkably fine one, escarpments and fosses are well preserved and the place possesses some unusual features. The most remarkable of such features consists of several stone parapets and a number of stone faced scarps of terraces, the aspect of which may be seen in the illustrations. The Maori seldom utilised stone in such works, though some other instances are known in the Auckland area.

The steep bluffs and perpendicular cliffs extending from A through V, D and F right round to W were of great advantage to the fortifiers of Te Koru. See Fig. **55**, p. 153. The land neck from A across to W also lent itself to defence, inasmuch as the summit area marked N lies at a considerable height above the flat land south-east of it, and the fall to that flat is an abrupt one, a feature that naturally lent itself to high and steep escarpments. It will be seen that steep scarps are still in evidence, also that strong defences barred the approach of an attacking force by way of the low and narrow saddle connecting the *pa* with the high ridge to the south.

Not the least interesting item concerning this old fort is the number of food storage pits situated within the defences. These are mostly excavated under the inner scarps of terraces and fosses, thus economising space. They are of the oblate form so often seen on this coast, with dome-shaped upper parts, circular and most symmetrically formed. The entrance passage is at the side of the contracted upper part, and some of these entrance passages are 3 to 4 ft. in depth.

The low lying river flat on the eastern side is enclosed between the X, C, D line and that marked X,V,D, the latter line representing a cliff about 60 ft. high at X and decreasing to about 16 ft. towards D. The flat is covered with very dense forest growth. Its outer edge is the river bank that has been protected by a wall of stones, or faced with stones. Under normal conditions the flat is 4 ft. or 5 ft. above the level of the waters of the river, which flow within 20 ft. of the stone faced bank. At B is an entrance passage from the river bed, probably the ford was opposite this opening. This entrance is a sunk way sloping upwards like a block cutting, and is 10 ft. wide. Entering this passage from the river bed we find a short stone wall flanking it on the right, and a scarped face on the left. The outer line of the flat has its bank faced with stones from 6 to 24 inches in diameter, waterworn stones taken from the adjacent river bed. For a considerable distance a stone wall or parapet has been built on the top of the bank, evidently to raise it as an obstruction, for this superimposed wall is seen at places where the original bank was a low one. Occasionally this outer scarp is as much as 9 ft. in

FIG. 54.—VIEW OF TE KORU PA FROM THE EASTERN SIDE.

See p. 151.

OLD DEFENSIVE EARTHWORKS NEAR PETANE, NAPIER DISTRICT.

[Photos by Augustus Hamilton

height. The interstices between the stones of the parapet appear to have been filled with earth. At C the stone parapet is 5 ft. high.

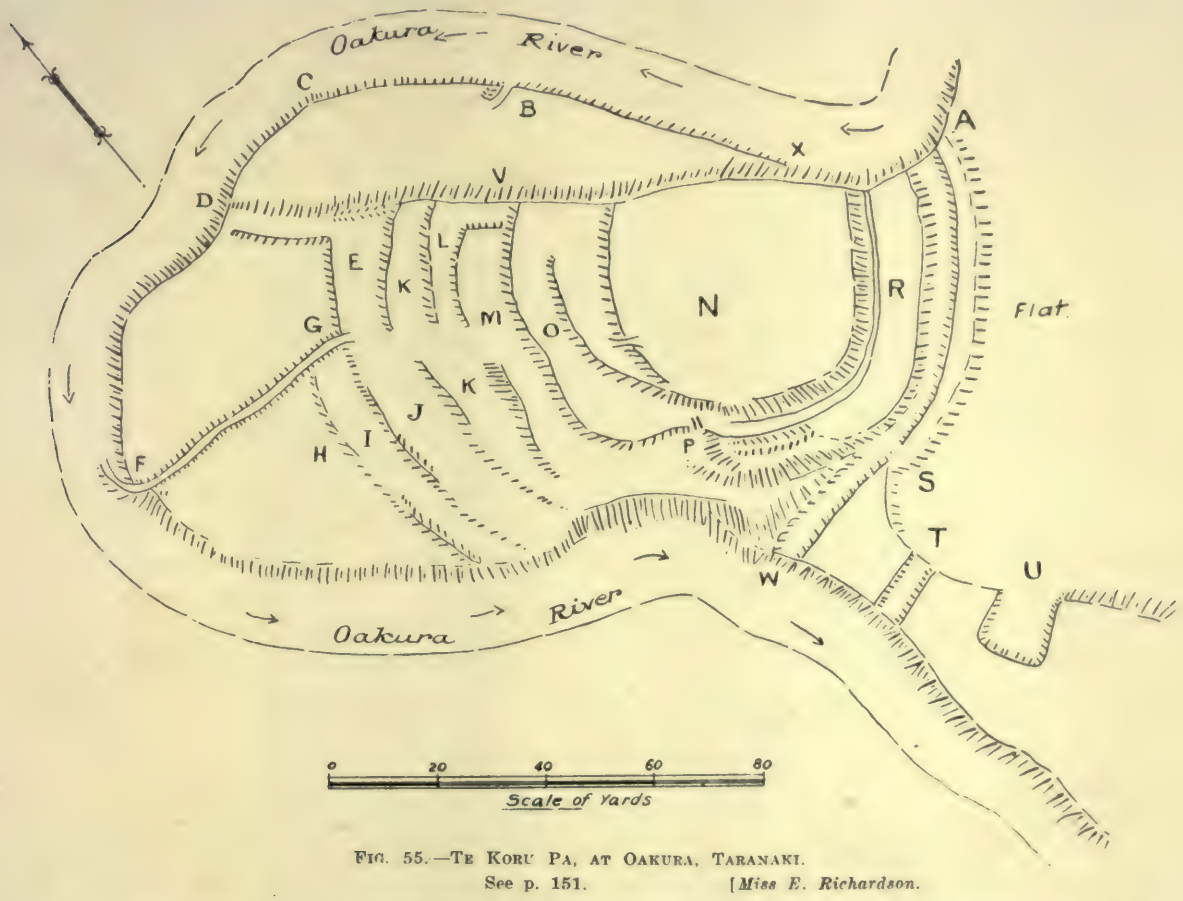


FIG. 55.—TE KORU PA, AT OAKURA, TARANAKI.
See p. 151. [*Miss E. Richardson.*

At D is encountered the end of the cliff extending from A which here runs out on the river bank, decreasing in height from X to D. Ascending this bluff at the D end we find a fine flat terrace bounded by D, F, G and formed by the excavation of the sloping ridge. Extending from D to E area, the latter being an upper terrace, a part of the original formation 9 ft. wide has been left intact along the bluff head. This stands as a wall, the outer steep scarp of which runs from 14 ft. to 18 ft. in height, and the inner or western scarp 4 ft. to 8 ft. From D to F is a steep cliff 20 ft. and upwards in height, which is the continuation of the A, D cliff, and extends right on to W and beyond. The river flows near the base of the D, F bluff. From F to G is a perpendicular scarp of 10 ft. The wall or causeway from D to E area was apparently left unexcavated in order to preserve the defensive advantage of the bluff scarp, for the alluvial flat at the base of the cliff, if a residential area, could only have been a subsidiary one, to be abandoned in the case of a serious attack.

Proceeding round the base of the D, F cliff the explorer encounters a somewhat unusual feature in Maori forts, a graded road about 8 ft. wide leading upward from the water's edge to give access to the defended area. This was the main entrance to the fort, on entering which it changes its nature and becomes a sunk way or trench, and continues as such from 3 ft. to 5 ft. in depth to G where it enters the scarp of J, E terrace as a narrow excavated passage 8 ft. deep and 4 ft. wide at the bottom. This entrance passage was certainly so excavated for defensive purposes, and would be flanked

by parallel lines of stockades, thus persons entering the fort had to pass along a narrow sunk lane a few feet wide, and at the mercy of any force stationed behind stockades on superior heights at either side. This scheme of defended entrance passage is a most ingenious one. Some similar defence undoubtedly existed higher up the ridge where access was gained to K and M terraces, but no sign of a passage exists from M to O terrace, of which more anon.

The H terrace is another flattened area showing a steep river bluff on the western side, and a stone wall, or rather a stone faced scarp, 5 ft. in height and nearly perpendicular dividing it from terrace I. H area lies at a lower level than that on the northern side of the entrance passage.

Terrace I is from 12 ft. to 20 ft. in width, the southern end of which has an outer wall or parapet 4 ft. high. The inner scarp is 15 ft. in height and is partially stone faced. This terrace terminates on the cliff head, the river being 30 ft. below. A small trench or sunk way seems to have been made down to the river, the upper part of which is also partially stone faced. All these terraces have been excavated out of the slopes of the ridge.

Returning to the passage at G, the ascent to terrace E, J is through the narrow sunk way or trench some 30 ft. in length, the sides of which are partly built up with stones. The end of this terrace overlooks the river flat and along that brink runs a stone faced parapet now 3 ft. in height, outside of which is the steep bluff, here about 16 ft. in height. The terrace is here 40 ft. wide, narrowing to 30 ft. opposite G. Its interior scarp is 8 ft. high and stone faced in some parts. South of the entrance passage this terrace is continued at a somewhat lower level, and 30 ft. to 40 ft. wide, curving round the ridge to end at the river bluff, here about 40 ft. high. The full length of this terrace from bluff to bluff is about 80 yds. Its inner scarp is 8 to 9 ft. high and faced with large stones in some parts. Near the southern end an incurved recess seems to represent a former mode of access to K terrace, the trench being now occupied by two large tree ferns. See Fig. **56**, p. 156. Along this terrace storage pits are noted.

Returning to the open space opposite G a sloping approach leads up to terrace K, which is 5 to 8 yds. wide at this end, with an inner scarp of 4 ft. showing stone facing and with 7 or 8 storage pits. As we proceed this terrace widens out, then rises and narrows to run into terrace M above. Its inner scarp is 4 ft. to 8 ft. high and faced with stone to some extent.

The small terrace L is not continued south of the entrance way. It is 12 ft. to 30 ft. wide and 21 yds. long, and it has been excavated round the bluff head with a width of 20 ft. so as to block the approach of terrace M to the cliff, a curious formation.

Ascending to terrace M, along which are seen many storage pits, the northern end is found to be 30 ft. wide. Further on it narrows a little, and presents a steep inner scarp 17 ft. high. It is 50 yds. long from its abrupt end at the incurve of L terrace to the point where K terrace joins it. It then rises and swings round the hill curve to end at the high river cliff. At P is a narrow sunk way 4 ft. wide and 5 ft. deep connecting this terrace with one above it. The sides of this sunk way or passage are built up with stones. All these stone faced walls and scarps are well constructed and form an uncommon feature in native works. The illustrations show their appearance. See Figs. **55**a, **56**, pp. 155, 156.

The narrow trench-like passages here noted that give access from one terrace to another would probably not interfere with the stockades that extended along the outer scarp of each terrace, but would pass underneath the palisades, and such narrow trenches could be easily blocked by some system of bars.

The sloping approach up the slope from G to M would undoubtedly have defences across it at each terrace level, but it ceases at M terrace, the inner scarp of which is

FIG. 55A.—STONE FACED SCARP, TE KORU PA AT OAKURA.

[*Photo by Augustus Hamilton.*

A.

B.

FIG. 56.—STONE FACED SCARPS AT TE KORU PA.
B. shows a scarp the facing stones of which have been firmly gripped and confined by aerial roots of the lofty *mamaku* tree fern *Cyathea medullaris*.
See p. 154

here 15 ft. high and almost vertical. No sign of a passage giving access to O terrace is seen save at the subway above mentioned, where the scarp is much lower than at its northern end.

Terrace O commences at the high perpendicular cliff with a width of 40 ft. but soon divides into two terraces. The lower one of these is from 20 ft. to 35 ft. wide and 43 yds. long to where it connects with an upper terrace, as shown. The upper branch of O terrace begins with a width of 30 ft. with an eroded inner scarp of 4 ft. to 5 ft. Advancing 17 yds. one notes an old entrance to N area, and 10 yds. further on this terrace practically runs out into N which is the *tihi* or summit area, the highest part of the fort.

The N area is a level expanse about 40 yds. by 45 yds. in extent and the vertical cliff on the north-east side is probably 70 ft. in height, an admirable defence. The abrupt end of the ridge between A and S has been strongly fortified. Between terrace R and the summit area N rises an almost perpendicular scarp 17 ft. in height, at the immediate base of which runs a narrow trench 3½ ft. to 4 ft. wide in its narrowest parts, 6 ft. at the cliff head, and widening at its western end. It is 5 to 6 ft. deep now and contains a certain depth of detrital material. This moat increases the depth of the scarp to about 22 ft. Why this trench should be so narrow for some distance it is hard to say, for such an aspect is unusual in a native fort; it resembles a European rifle-pit. Under the high inner scarp are seen storage pits. For 30 yds. from the cliff head the trench curves round the scarp base, and further on widens out to 10 ft. and the flat terrace R resolves itself into an earthern wall 8 ft. high, evidently a part of the original formation left intact. About 50 ft. further on the outer wall ends and a terrace extends onward to the summit of a high cliff at the base of which runs the river, and in this vicinity we meet with the series of terraces already described. The A ,V, D line is the only face of the fort that does not carry terraces, being a rock cliff.

R is a levelled terrace area 8 yds. in width, the outer scarp of which is an almost perpendicular drop of 16 ft.; a formidable defence. At the base of this barrier is a fosse 6 ft. wide across the bottom and 9 ft. at the top; outer scarp 5 ft. high. This fosse runs from the summit of the cliff, where the height of the latter has dropped to about 30 ft. to the south-west. It slopes upward for 14 yds., and at 75 yds. it widens to 14 ft. bottom width, with an outer scarp of 9 ft., and inner one of 25 ft. At 105 yds. it runs out at the cliff head at W 40 ft. or so above the river. At 25 ft. from the end this fosse is 20 ft. wide at the bottom, outer scarp 11 ft.; inner one 24 ft. This is where it passes through the spur that connects the fort with a high ridge to the south. The huge fosse near W, with the other above it described elsewhere, and that at T, are the defences made to baffle the approach of enemies along this spur. The rapid fall of the spur to the low saddle at T much facilitated the fortifying of this feature.

On the outer side of the A, S fosse is a level area 10 ft. wide and upwards, with an outer scarp of 10 ft. down to the level of the flat. This rampart is the outermost defence. These scarps, when supplemented with stockades, must have been defences practically impassable in pre-gun days.

Passing down the spur from the W fosse, the fosse T is found to be at the low saddle where the spur is only about 16 yds. wide. The sides of the spur have been steeply scarped and would be stockaded along each brow as a security against flank attacks. The T fosse across the low saddle is 12 ft. deep and 10 ft. wide at the bottom, the scarps being steep. From this fosse the spur rises to connect with the high ridge to the south. A little distance up this spur is a huge excavation at U carried half way across the spur. This may be an unfinished fosse or it may have been so designed to lessen the space to be defended. The excavation has been carried in about 35 ft., is 30 ft. wide and 8 to 10 ft. deep. On the western side of this spur is the precipitous river bluff. A path evidently

ran from the fort up this spur, and 50 yds above the U excavation is a fosse 20 ft. wide and 12 ft. deep cut across the spur. It is about 25 ft. long and at its eastern end is not cut through the ridge, but a block 6 ft. wide of the original formation has been left as a causeway. This spur must have possessed flank defences of stockading. This was apparently the outermost defence here and 40 yds. further up the spur reaches a small plateau.

On the low flat east of the spur are signs of former native occupation.

It is satisfactory to note that Te Koru has been protected by means of a fence across the base of the point, and also that the dense growth of bush covering it will tend to prevent erosion of the scarps. The stone walls and stone faced escarpments present a very interesting feature well worthy of preservation.

Some interesting notes on this old fort may be found at p. 258 of *The History and Traditions of the Taranaki Coast.*

In writing of the Koru *pa*, at Taranaki, Mr. W. H. Skinner remarks:—"This *pa* probably takes its name from *koru*, a bend, loop or fold, as it is built on a deep bend of the Oakura river. Koru is unique amongst old Maori strongholds in the Taranaki district, in the kind of protective works adopted; the walls are all built up with rubble work, the stones for which were obtained from the bed of the Oakura which flows immediately beneath. These stone walls, or rather walls faced with stone, run up in some places to a height of 15 ft., and all the minor outworks are faced with stone in the same manner."

Another item of local interest is the old military redoubt at the village of Oakura. This relic of the troublous days of the Maori war against Europeans in the 'sixties' of last century is gradualy becoming effaced. It was evidently a strong place, the earthworks being of a massive type. The fosse or moat outside the ramparts is about 65 yds. long on each face of the square redoubt, its inner scarp 18 ft. in some parts, and outer one 8 to 13 ft. where fairly intact. Earthwork bastions project 10 or 12 ft. at each corner, each of which commands two curtains. The banquette inside the wall is 3 ft. above the level of the interior area, which latter is about 30 yds. square. The banquette is retained by lengths of tree fern trunks inserted in the earth. There seem to be the foundations of small block houses in the bastions.

There are said to be stone faced terraces on the Ohina islet at Mercury Bay, at the head of Okahumoko Bay (Whangaroa), and on the Poor Knights islets.

Stone faced scarps 7 ft. in height are still extant on a small *pa* at Maunga-turoto, near Ohaeawai. Some stone work is also said to be seen on Motu-taiko, a small island in Lake Taupo. Stone faced terraces are reported from a number of places.

In an account of the Great Barrier Island written by Mr. Weetman, appear some interesting notes on terraced hill slopes seen there:—"There are evidences in various places that the island must have at one time been inhabited by large numbers of the Maori race, for, apart from the remains of several *pa*, some of which in the rockiest places are built up of loose rocks, instead of being entrenched by digging as usual, there are places in the forest, notably at Korotiti on the east coast, which mark the site of their old habitations and cultivations, the slopes of the hills being terraced, and the ground supported by stone facing. In other places enclosures are fenced in by stone walls, which are as straight and well built as those constructed by Europeans. Out of these enclosures large trees are growing, more than a foot in diameter.....There are also, in places now likewise covered by forest, large heaps of stones, which had evidently been collected from the surface prior to cultivating the land."

The following is from Judge Fenton's Orakei Judgment:—"About the year 1720, a great chief of Waiohua or Nga Iwi was living at One Tree Hill, where he had a *pa* the trenches of which may be seen to this day. His people held *pa*, or positions of defence, formed by large ditches, and protected by stakes, and in some places by stone walls, at Maunga-Kiekie

(One Tree Hill), Maunga-rei (Mt. Wellington), Mangere, Ihu-matao, Onehunga, Remu-wera, Omahu, Te Umu-ponga, Kohi-marama, Te To, Rarotonga, Te Tatua, Owairaka and other places."

Stone faced scarps have been seen in a number of old Maori forts at different places, though it will probably be found that walls or parapets constructed entirely of stones are rare. The late Archdeacon Walsh informed us that Mr. Charles Spencer, during surveying operations, has seen on the rough coast line between Cabbage Bay and Cape Colville, a number of old *pa* of peculiar structure, a conspicuous feature of which is the extensive use of stone walls. Mr. Spencer's account is that the main *pa* examined by him, for there are several in the vicinity, is situated on a narrow ridge and that in excavating the deep trenches at either end the natives had to work a stiff soil containing many stones and boulders. With these they faced the scarps of the fosse, the stones being carefully arranged and packed in with earth, so as to present a massive and imposing face to the stronghold.

Mr. W. McKay has informed the writer that he saw stone walled, *i.e.* stone faced terraces on the eastern slope of a forest clad limestone ridge about two miles from the homestead at Wai-marama, H.B. and about the same distance from the coast. They are overgrown with trees. The top of the ridge was not examined; an examination of it might reveal some old fortified places.

A number of stone walls seen by Mr. McKay near Port Charles in 1896, composed of loosely piled stones, seem to resemble those of the far north. In some cases two such have but a narrow lane between them, some are detached and apparently purposeless, others form enclosures like stockyards. We can only suppose that these lands were used for cultivation purposes and that the stones, piled into low walls, served possibly as break-winds, apart from the necessity of clearing the land of them. The *kumara* plant, in exposed situations, had to be protected by breakwinds. Much of this land is overgrown with trees.

Further notes on such stonework defences will be found in the *Journal of the Polynesian Society*, vol. XXIX., p. 41; also vol. XXX., p. 164. The Nga-Weka *pa* at Stony River also shows stone faced scarps.

Puke-Tarata Pa.

This old fort is situated near the town of New Plymouth. It is very well preserved and has been fenced in by the Scenery Preservation Committee to prevent its destruction. This fact has, however, caused it to become overgrown with gorse and fern to such an extent that no good sketch or complete measurements could now be obtained without much trouble and loss of time. It is situated on an isolated hill or short ridge much like that of Okoare in form. About two hundred yards distant to the S.W. is situated the Pari-hamore *pa* on another ridge.

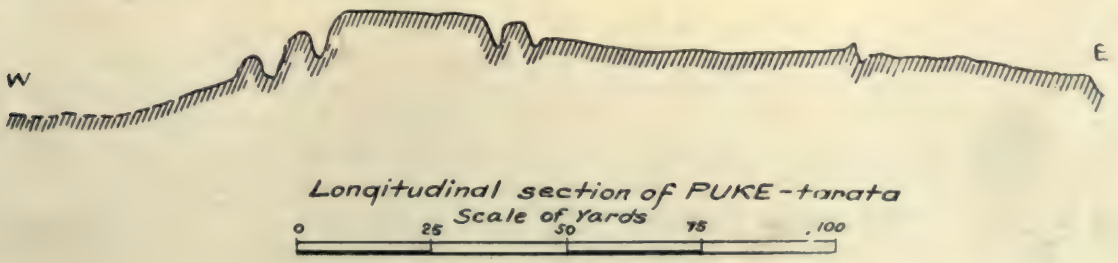


Fig. 57.—Longitudinal section of Puke-tarata Pa, Taranaki.

[*Miss E. Richardson.*

Puke-tarata stands in a loop formed by the Tehe-nui river and is cut off from other high land to the west by a small area of low lying flat land and a low saddle neck, probably

a cultivation ground of former times. The *pa* is divided into three areas much as Okoare is, and is about 150 yds. long. The western end, where the hill descends abruptly to the low neck, is defended by a ditch with a 6 ft. parapet on its outer side and a high scarp of 12 ft. on its inner side. This latter is the outer scarp of a rampart 6 ft. wide in the middle, but wider at its two ends and practically level on the top. Inside this is another ditch with a 20 ft. scarp on its inner side and the top of that scarp is the highest part of the *pa*, an area 25 yds. long, inner measurement east and west. The wall between the two ditches is apparently not a built one but part of the original hill face. Round the northern and eastern sides of this area runs a terrace 12 to 18 ft. wide which swerves round to the southern side, where it changes its form and becomes a rampart. The south side falls steeply to the river. These northern and southern sides would be protected by scarps surmounted by stockades.

The eastern end of this area is defended by a fosse 10 to 12 ft. deep cut across the ridge, outside of which is a wall, with another ditch outside that. Then comes another area with a smaller scarp and ditch at its eastern end, the scarp top bearing the remains of a parapet. The third area is 38 yds. long and shows no strong defensive works.

This *pa* so closely resembles Okoare in form and defences that it was not considered worth while expending time and labour in clearing away the prolific growth of furze in order to obtain measurements. The highest area of the *pa* was defended by a scarp that was probably from 20 to 25 ft. high, besides outer defences.

Puke-tarata and Pari-hamore were both strongholds of the Atiawa tribe. They are situated on the south bank of the Tehenui river, on an Education Reserve.

The Ihupuku Pa at Wai-totara.

This interesting old fortified place, like Te Potiki a Rehua, was a stronghold of the tribe known as Nga-rauru, and is situated about half a mile west of the railway line in the valley of the Wai-totara, and about 100 yds. from the right bank of the river of that name. The site of the *pa* is a small isolated hill of somewhat triangular form, two sides of which are remarkably steep, even precipitous, while that representing the base of the triangle slopes easily down to a low rounded ridge trending northward to the hills. It is this end of the hill that has been defended by heavy earthworks, with accompanying stockades. The other two sides have evidently been protected by means of lines of stockades running along the summit of the bluffs and precipitous slopes. This *pa* was occupied in the 'forties' of last century, but was probably deserted soon after that time. There is now a small native hamlet on the low land just north of the old *pa*, while the road to the coast passes along the flat on the eastern side of the hill and swings westward round its southern extremity.

E. J. Wakefield, who visited Ihupuku *pa* in the early 'forties,' when travelling to Taranaki, gives the following account of it, and remarks that about 100 people were living there at the time. Approaching the place from the south across miles of sand hills he writes:—"The valley seemed about a mile and a half in width, and the opposite side was clothed with timber. Close to the further bank of the river which wound through the vale was a sort of acropolis, on which stood the village to which we were bound. Except on the very top, the houses were shaded by a luxuriant growth of *karaka* trees, which encircled the base and feathered up the sides of the fortified hill. The village was called Te Ihupuku, or 'the nose of the belly.' [Wakefield's rendering of Maori names is appalling, but he meant no harm.] Descending the sandhill, we traversed a fertile but somewhat swampy plain, and crossed the river, here about twelve yards wide."

The writer met with a very surly reception from these natives, owing to their having lately become Christians. He continues—"In the morning I strolled about the citadel, and gazed with pleasure on the fertile country around. The slopes of the valley are

almost all covered with timber, but the level ground, both above and below, has a truly park-like appearance, being covered with a jungle of fern, grass, reeds, flax and shrub, interspersed with groves and fringes of timber. About a hundred yards above Te Ihupuku, a strong and well made fishing weir stretched across the river, only two or three small passages being left for canoes. This, they told me, was for catching the *piharau*, a fine sort of lamprey, which is taken in abundance during freshets. The weir is called *hutu* by the natives. They place eel-pots, called *hinaki*, which are very artistically made, at the lower extremity of funnels formed by series of upright poles driven into the bed of the river, the interstices being filled up with fern.

"I was much surprised to find, on the very pinnacle of the acropolis, a large quantity of large oyster shells imbedded in the soil. The native whom I interrogated, persisted that they had been there from time immemorial." (These shells are those of the fossil *Ostrea ingens*.)

The groves of *karaka* trees and houses have long since disappeared, and the summit is now a native cemetery of the usual slovenly appearance, and the grazing ground of sheep. But the very summit of the hill is a small outcrop of very soft sandstone with numberless huge oyster shells embedded therein; this is on the western side overlooking the precipitous descent to the plain below.

The top of this hill, the part originally fortified and used as a stronghold, measures about 170 paces from north to south, and about 65 paces from east to west, but runs out to a sharp point at the south end, where a cliff afforded a good defence on the east and west sides, but a sunken entrance passage has been made into the *pa*, and a little scarping done. Another entrance was at the north end.

The western slope of this hill is extremely steep, in fact precipitous, but now scaleable in most parts; both sides must have been defended by lines of stockades along the brow of the bluffs when the place was occupied. The east side is even more precipitous and some parts unscaleable. No earthwork defence of the nature of a parapet was employed on these sides.

The summit of the hill, the fortified and occupied area, is not level, but slopes gently, and the southern end has been cut into terraces for house sites, the northern end scarce needing such preparation, though levelled for hut sites. Hut sites and store pits are numerous; the latter especially so, some areas of the hill are honeycombed with them, especially the eastern slope outside the defences. The sloping northern end of the hill has been fortified by means of heavy earthworks, three lines of which run from west to east, not horizontally, but following the slope of the land, and thus falling towards the east. These works might be termed terraces with heavy earth walls or ramparts on their outer edges, but they rather bear the aspect of huge ditches and walls. Denudation may have altered the appearance of them to a considerable extent, and it is not known as to whether or not dwelling huts were erected on these narrow enclosed terraces. The ramparts were surmounted by stockades according to local natives.

Commencing at the top, the edge of the summit of the hill *pa* was not provided with any earth wall, and from here the hillside has been scarped so as to form a wall about 20 ft. high, on the top of which a stockade would add another 10 ft. to the defence. At the base of this scarp is a terrace about 20 ft. wide in the clear, and nearly 30 ft. at the eastern end, but outside this clear space (now somewhat rounded by the accumulation of debris) comes the rampart, or earthen wall. The terrace below this is narrower, about 12 to 16 ft. in the clear; its inner scarp, plus the superincumbent rampart being not less than 18 ft., while its own outer rampart is now 6 ft. high at the western end. All these earthworks diminish in size in their eastward trend, and gradually disappear. The outermost terrace was about 13 ft. wide in the clear, the inner scarp, plus its wall, possibly 20 ft. high, and the outer rampart now 5 ft. in its highest part. This is the lowest line of defence.

FIG. 58.—VIEW OF THE URENUI VALLEY FROM TE KAWA PA. POHOKURA PA IN MIDDLE DISTANCE.
See p. 164.

FIG. 58A.—VIEW OF POHOKURA PA AT URENUI.
See p. 163.

Photos by Augustus Hamilton.

The water supply of this fortified village was probably the Wai-totara river, about 100 yds. east of the base of the hill, but water might have been obtained by sinking a few feet at the base of Ihupuku.

Old fish weirs are still seen in the river near the *pa*, but they have not been kept in repair, and probably are not now used.

Hillock or Mound Forts.

A considerable number of the pre-European forts come under this heading. Such places are for the most part found in flat country, where larger hills were not available, such as the plains west of Mt. Egmont.

Pohokura Pa.

Situated at Urenui—Taranaki District.

This *pa* is a very small isolated hill of elongated form situated on a low river flat less than a quarter of a mile from the sea beach at the mouth of the Urenui river. It stands on the right bank of the river, which flows at the base of the hill. The hill is a small one and its summit about 50 feet above the level of the flat. Although an old and historic place Pohokura is by no

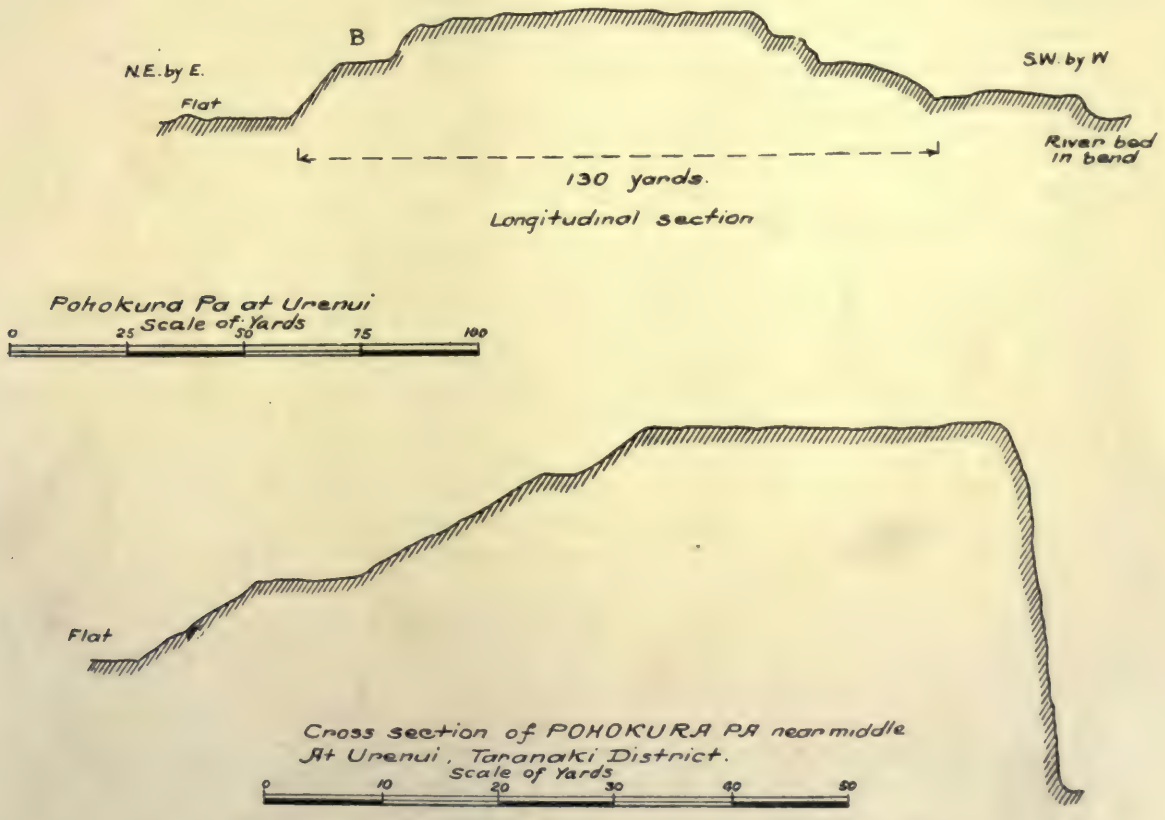


Fig. 59.—Pohokura Pa, Taranaki. Longitudinal and Cross Sections.

[*Miss E. Richardson.*

means imposing in appearance; it is small and lacking in earthworks, the scarps and terraces are also much broken down. It was examined and measured simply because it serves as an illustration of a fortified isolated hill, and also on account of it being a very old *pa*, according to native tradition.

The defences of Pohokura consisted of scarps and stockades, but the escarpments have become much abraded, as shown in the longtitudinal section (Fig. **59**, p. 163), hence the unimposing aspect of the place.

The southern side of the hill is a perpendicular cliff, with the Urenui river flowing immediately beneath it. This limits the terraced area to the two ends and northern face of the elongated mound. At the S.W. by W. end are two terraces, the lower one 18 ft. wide, while 16 ft. above it is another one 15 ft. wide. Both were wider originally, for the scarps are much abraded and a considerable amount of detritus has been deposited on the terraces.

From the upper terrace a rise of 13 ft. lifts us to the summit area, which is nearly level and about 70 yds. in length. At about 60 yds. from the river the upper terrace runs out, but another one lies above its level and continues along the northern side of the hill. These terraces have been wide enough to accommodate many huts. Both terraces end at the N.E. by N. corner of the hill, where the upper one breaks down to the short wide terrace marked B which lies below it, and is 23 ft. below the level of the summit.

Urenui *pa*, another such isolated hill, but much larger than Pohokura, lies about 10 chains to N.E. by E.

A large number of old fortified places are in evidence near the Urenui township. There are twelve within a mile of the mouth of the river; *viz.*, Maruwehi, Pohokura, Urenui, Pihanga, Kumara-kaiamu, Ohaoko, Pa-oneone, Moe-ariki, Horopapa, Te Kawa, Pa-wawa and Orongowhiro. Fourteen others were observed within a comparatively small area in this district, and yet others known to exist have not yet been fixed on the map. The accompanying plan (Fig. **60**, p. 165) shows 26 of these old fortified places within a small area.

In the view given of the Urenui valley Pohokura is the isolated hill seen in the middle distance. The corner of the Urenui *pa* can be seen on the right. Maruwehi is the far point on the right. The view is from Te Kawa *pa*, the abraded earthworks of which are seen in the foreground. See Fig. **58**, p. 162.

The Pahi-tere Pa at Oakura.

The Okoki and Otumoana forts described elsewhere are specimens of *pa* constructed on long ridges in which advantage has been taken of superior altitude in the ridge end, the works terminating at a low saddle or dip in the ridge that lends itself to defence. Pahi-tere illustrates another type, that of a small and completely isolated mound, or hillock, situated on flat land, and the whole of which is included within the lines of defence. Such fortified places are seen south of New Plymouth, in the Cape Egmont district and elsewhere. The Pohokura *pa*, already described, illustrates one defensive method, in which the slopes of the hill were simply terraced and protected by lines of stockade. Pahi-tere represents another method of defence, in which a fosse with an outer wall was formed round the slopes of the hill, with a high steep scarp extending from the fosse to the summit area.

The small *pa* of Pahi-tere is situated on the level plateau on the right bank of the Oakura river, and about a mile from the sea coast. The rock column of Paritutu lies about N.N.E. from here, and the Oakura village about S.W.

The small hill is of an elongated form, as is frequently the case with such mounds. The two sides have been fortified by forming a steep scarp about 12 ft. high on the upper part of the slope, to isolate and protect the summit area. The base of this scarp represents the bottom of a wide fosse up to 16 ft. in width, or it may be looked upon as a terrace with a heavy rampart or outer wall, now 6 ft. to 8 ft. in height. Below this wall on the western side is a terrace some five yards further down the slope, while on the eastern side are several terrace formations outside and below the wall. These were undoubtedly the sites of dwelling huts, as also was the small summit area, and possibly also the space inside the wall.

Apparently the entrance has been at the south end, where an extra defence exists, an inferior wall or parapet outside the main one. There seems to have been a causeway across the trench.

FIG. 60.—SITES OF OLD FORTIFIED VILLAGES OF THE COASTAL AREA BETWEEN THE ONAEROA AND MIMI RIVERS, TARANAKI.

Around the edge of the flat summit area, which is but 30 yds. long by 12 yds. wide, are seen the remains of a parapet still 3 ft. high in some parts. The corners of this area have been partially built up with waterworn stones that must have been carried hither from the river bed. A stockade must have supplemented the parapet as a protection for this summit area.

The low outer terrace on the western side transforms itself into a fosse with outer wall at the north end, as we have noted at the south end. The summit area is 60 ft. or so above the level of the flat. A small stream on the eastern side would provide the water supply. An outer terrace below the wall on the eastern slope corresponds with that on the western side, while below it are apparently incomplete works that bear every appearance of a terrace in process of excavation some 8 ft. below the level of the upper one.

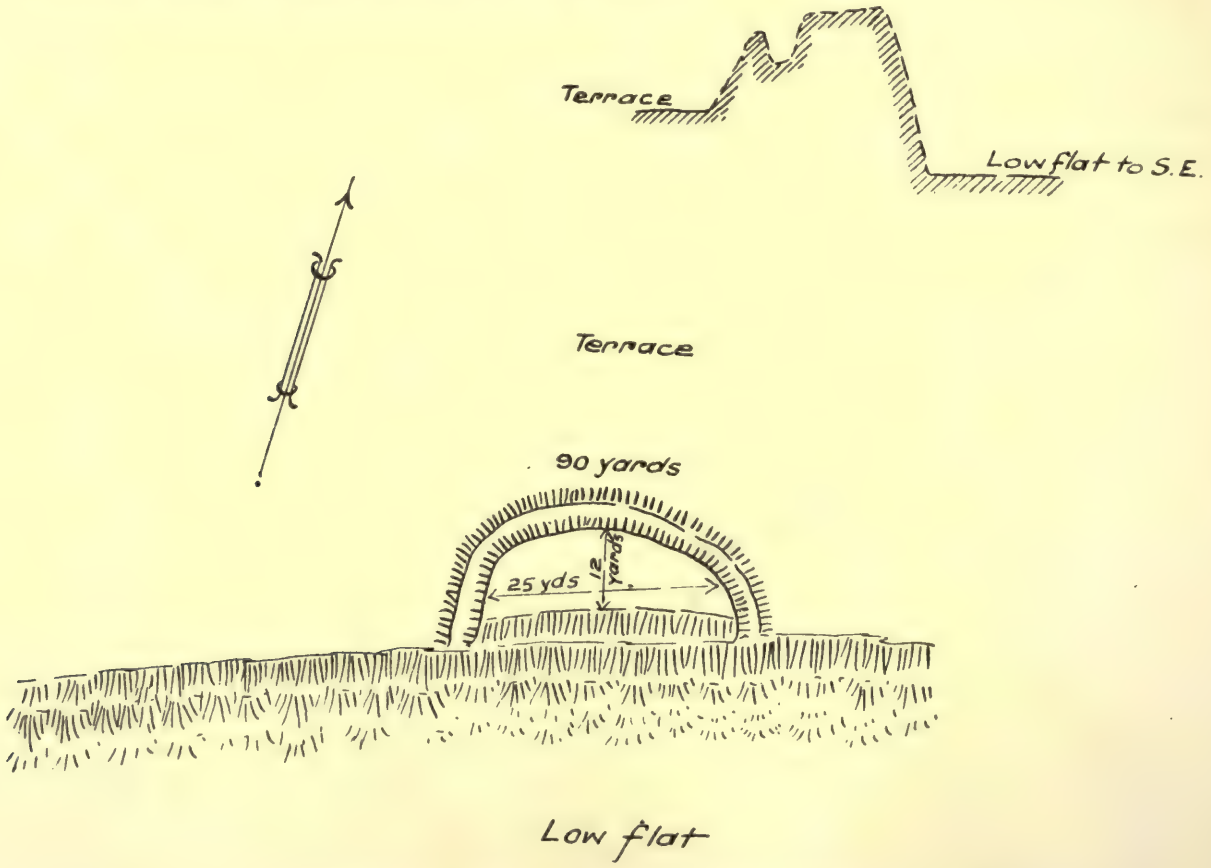


Fig. 61.—A Small Mound Pa near Te Rewarewa, Taranaki.

[*Miss E. Richardson.*

On the brink of the terrace about a quarter of a mile N.E. of Te Rewarewa *pa*, Taranaki, is situated a small *mesa* or flat topped hillock with steep sides. See Fig. **61** above. This has been fortified and occupied in former times, though the habitable area is very small. The side toward the low flat is a steep bluff along the top of which a stockade must have been erected. The summit of this hillock is about 25 ft. above the level of the terrace, and about 60 above the lower flat. This habitable part is twenty-five yards long and twelve yards wide in the middle. The sloping curved sides of the mound have been scarped on the upper part, at the foot of which scarp is a ditch, outside of which rises a heavy rampart 7 ft. above the ditch bottom. Outside this rampart the sides fall away to the terrace level. These defences are continued right round the curved line of the mound to impinge upon the bluff at either end. The entrance was at the western end near the cliff head.

This diminutive *pa* was probably an outpost, or was occupied when the terrace lands near it were under cultivation. It was not an uncommon thing for the natives to have small refuges of this nature near their crops.

In selecting a hillock, or mound situated on flat land as a *pa* site, the Maori usually employed one of two modes of fortifying. He either steeply scarped the sides of the hillock and erected stockades along the scarp brows, or he formed round the sloping sides a heavy earthen wall or parapet. In the latter case the inner and superior scarp would be a secondary defence. The wall might be at or near the base of the slopes, or half way up them. The space between the parapet wall and the interior scarp might be merely a trench or fosse, or it might be wide enough to contain hut sites. This latter feature, in larger hill forts, develops into the wide residential terrace with an outer rampart. In some cases the mound or hill was terraced as to its slopes, the scarps of which terraces would be surmounted by stockades.

The Koko-ariki *pa* on the right bank of the Waikohu river, just below the Manga-mahaki stream is a good specimen of the fortified mound. It is of very limited area.

Ridge Forts.

Under this heading are given descriptions of various types of forts situated on ridge summits and spurs of ridges. These ridge forts are numerous and well illustrate the ingenuity of the Maori in fortifying such positions. The Tapa-huarau series herein described is of special interest.

Otumoana Pa.

This ridge fort is situated near the Urenui river, on the left bank, about a mile from the main road bridge. This is not an isolated ridge-like hill, as is Urenui *pa*, or the fortified extremity of a flat plateaux, as are Kumara-kaiamu and Te Kawa, but the summit of a narrow ridge has been levelled into seven main areas at different levels, and extending for a considerable distance. The fortified part of the ridge is connected with the plateau to the S.W. by a narrow neck that is lower than the defended area. This low and narrow part was selected by the neolithic engineers as the most desirable place for the outermost defence. See Fig. **62**, p. 168.

Referring to the plan of Otumoana, the letter A marks the very narrow part of the spur, from which point the ridge summit rises gradually until it reaches its highest part at the south end of O area. The scheme of defence was the levelling of the ridge top into areas of various heights and sizes, each area being separately defended by fosses, scarps, parapets and stockades, so that each area was in fact a fort in itself. Thus there were seven fortified posts, each of which could be defended as a self-contained area, and not including the lateral terraces which were residential areas, the outer limits of which would be defended by stockades and scarped faces. The strongly fortified divisions were those marked P, Y, X, Z, K, M, and O. Below these summit areas terraces have been formed for residential purposes on both sides of the ridge. Those on what we may term the northern side have suffered much from erosion and other destructive agencies, and are not now continuous or even traceable throughout. On the southern side the terraces are much better preserved, having been protected by a fine growth of light bush composed of *mapau, kohe, karaka, tawhero, mahoe, rewarewa, mamaku,* etc., which trees flourish in a light and kindly soil.

Proceeding onward from A where the ridge summit is very narrow, we find the first sign of defensive work at B, where a short fosse 5 yds. long and 7 ft. wide has been carried half way across the ridge summit. The inner end of this trench now shows a scarp of 7 ft. Presumably the entrance was situated at the southern end of the fosse, the small area between it and the scarp at C being enclosed by palisading. An enemy forcing an entrance through this gateway would be immediately confronted by the scarp defence at C, which is now 6 ft. in height and would be surmounted by a stockade as an additional barrier.

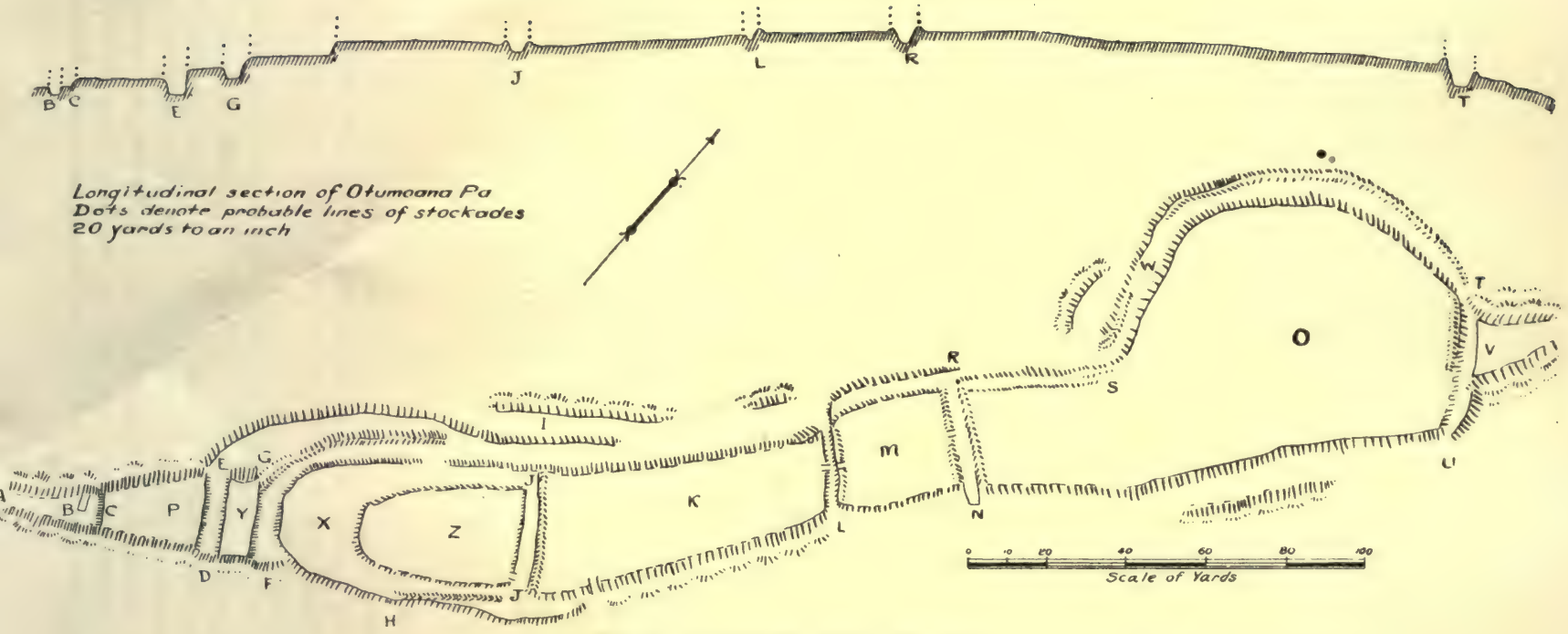


FIG. 62.—OTUMOANA PA, URENUI, TARANAKI.
See p. 167.

[*Miss E. Richardson.*

Rising to the area marked P we find it to be a levelled space of somewhat triangular form, 6 yds. wide at C and increasing to 16 yds. at the other end, the trend of the ridge top being about S.W. to N.E. In length this P area is 23 yds. This is the first of the artificially levelled self-contained defensive areas. Its defence on the C line is given above; that at the opposite end of the area was a deep wide fosse, while the lateral defences, now showing merely steep slopes, were undoubtedly scarped faces when the place was occupied. All these scarps, as also those of the various fosses, would be surmounted by stockades consisting of stout posts with horizontal rails lashed thereto, to which the strong palisades would be secured. It will be seen that the defences of this fort are of the type usually employed by the Maori in the construction of ridge forts, *viz.*, fosses, parapets and stockades, with steeply scarped slopes, across the ridge as frontal defences; while the lateral defences along the sides of the ridge consisted almost entirely of steep scarps surmounted by stockades. All signs of the latter have, of course, long disappeared. We shall see that a curious usage, already noted in the descriptions of other forts, is also in evidence here in the lateral or flank defences, namely the singular change made where a flat terrace is transformed into a fosse with an outer parapet or wall. Presumably it was considered advisable to strengthen the defences at such places. These flank defences were not so liable to be taken as frontal ones simply because no vantage point for attack could be found outside them, the ground falling more or less steeply from the base of the high scarps.

The fosse D E has assuredly been a very strong defence. It is 20 yds. in length, extending right across the ridge top. Its scarps are extremely steep, that on the inner side being practically vertical, save at its base, where lies a mass of detritus; it is nevertheless still 16 ft. high in the middle, a formidable defence if surmounted by a 10 ft. stockade. The outer scarp, on the P area side, is 12 ft. high in the middle. At 4 ft. from the bottom of the fosse its width is 14 ft. The brow to brow measurement is about 18 ft., the brows being somewhat eroded and the bottom of the fosse rounded by the effects of such erosion. The lower part of the trench has been hewn out of soft sandstone.

Area Y lies 5 ft. higher than area P but is much smaller, being but 7 yds. by 19 yds. These terrace-like areas were of various dimensions according to the slope and contour of the ridge top, hence the discrepancy in size. Some would accommodate a large number of huts, others very few, the residential sites being, however, largely increased by the subsidiary lateral terraces formed on the hill sides below the summit areas.

The F, G fosse is 18 yds. in length, the S.E. end being 5 ft lower than the other. It is 15 ft. wide above the debris-rounded bottom and has probably been that width at the bottom originally. The outer or western scarp of the fosse is from 6 ft. to 10 ft. high. The inner scarp is now about 18 ft. high, to which must be added the depth of debris in the trench, showing that this defence must have been an imposing one; indeed at its S.E. end this fosse shows a 20 ft. scarp on its inner side. Brow to brow is about 25 ft. The hillside to the S. is still steep, but on the other side a terrace has been formed. It is of interest to note how some of these lateral terraces run into the fosses and into each other. A double and occasionally treble system of terraces has existed on this northern side of the ridge, but these terraces are much broken away in places, hence their original arrangement cannot be fully delineated.

The next area, that marked X, presents a different form, inasmuch as from its two wings extend terraces along both sides of the ridge. On the south side, at H, which is 38 yds. from F a secondary terrace starts at a lower level, while the terrace on the other side is joined by that running from the Y area, and continues as far as the J ditch, where it ceases abruptly, while the remains of two other terraces are noted below it. The southern side of the X area is very steep and has a fine growth of light bush. This area is well levelled and quite flat. The terrace round the southern (S.E.) side of Z area is 18 ft. wide That on the northern side is 20 ft. in width and extends 65 yds., its inner scarp being 11 ft. to 14 ft. in height.

Ascending an 11 ft. scarp from X area we attain another levelled space marked Z on the plan. This terrace is 43 yds. long and 23 yds. wide at its eastern (N.E.) end. Below the southern

face of this area the terrace from X area resolves itself into a trench or fosse with an outer parapet, with an inner scarp of 8 ft. to 11 ft. and outer scarp of 3 ft. The trench is much filled with detrital matter. The parapet or outer wall widens out as it advances and near its termination is 18 ft. wide and of a flat-topped formation. It probably represents part of the original formation reduced by levelling operations, and not a true construction. The lower terrace from H lies 7 ft. below this flattened wall. At the inner or eastern end of Z area, extending along the eastern brow of J, J fosse are the remains of a parapet or superimposed wall now from 3 ft. to 5 ft. high. Also are seen slight signs of the former existence of such a parapet along the southern brow of this fosse. There was probably a gateway or passage at the southern end of the fosse, as marked. This may have been the site of a removable bridge across the fosse to give access to K area from Z, or it may have been an entrance to Z area from the lower lateral terrace by way of the fosse.

This J, J fosse is 25 yds. in length and debouches on to terrace formations at both ends. Its eastern or S.E. scarp is 11 ft. in height, and the opposite one is 6 ft.; scarps considerably eroded. Brow to brow about 18 ft. Width 12 ft. The western end of K area is somewhat lower than Z area.

The western end of K area is about 7 yds. wider than the eastern end of Z, and projects out on the northern side. This is owing to the discontinuance of the lateral terrace on that side, which here ends abruptly. K area is 74 yds. long, 19 yds. wide at its eastern end and 31 yds. at the western end. Its expanse has been carefully levelled for residence and the ridge top here is somewhat curved. On the southern face the lower terraces run out, the ground showing a gentle slope for 50 ft. which space was probably utilised, after which it drops steeply. Towards L the southern slope drops steeply from the summit. There seems to have been an entrance, as shown on plan, from this southern side. The northern side shows a steep slope for about 100 ft. and then a more gradual descent to the flat below. The central part of this sideling shows no signs of terracing, but much eroded remnants of terraces are seen near the ends of the area.

The fosse at L is 18 yds. long and 8 ft. wide, but unusually shallow, in fact it may be termed a mere shallow trench. Its western side presents a scarp of but 2½ ft., though the inner scarp is from 8 ft. to 12 ft. which must have been the principal defence here. There was apparently an entrance way here from area K to M, as marked. The superior height of the eastern scarp of the trench is produced by a parapet or superimposed wall of 5 ft. on that side.

Area M is 5 ft. higher than K, is level, and measures 30 yds. by 23 yds. Its eastern end shows the remains of a parapet on the brow of the fosse now 3 ft. to 6 ft. high, with signs of a passage in the middle thereof. The N,R ditch is 33 yds. long; it extends some way down the southern slope outside the line of defence. It is 10 ft. wide at the bottom and 12 ft to 15 ft. at the top; the scarp on the eastern side 6 ft. to 12 ft. high, that on the western side 11 ft. to 12 ft. In all these measurements decay must be taken into account, the erosion of scarps and parapets, as also the collection of detritus in fosses and at scarp bases. Below the northern side of M area is a terrace.

Area O is the last and largest of the series, the ridge top widening out at this place, after which it contracts at the U, T line and descends as a narrow spur to the river flat. Its western end shows an earthen parapet now 4 ft. to 5 ft. high on the eastern side of the N, R fosse, also the remains of a similar parapet for 40 yds. along the R,S line. This area is 130 yds. long and its western end marks the highest part of Otumoana *pa*. It has been levelled in areas for occupation but has a slight fall to the N.E. Though only 30 yds. wide at S, it widens out considerably from that point. At V the ridge narrows suddenly and falls away on its descent, hence this spot has been selected by the fortification experts as the limit of the fortified area. A deep fosse 40 ft. long has been cut across this narrow part of the spur, and this still presents an 18 ft. scarp on its inner or western side, the outer scarp of the ditch being 8 ft. high. This is the outermost defence, and the inner scarp of the fosse

was probably not less than 25 ft. in height when the *pa* was occupied. This imposing defence does not represent the original height of the ridge at this part, for it is clear that the parapet marked on the plan is a built wall superimposed on the northern half of the crest of the original scarp extending from U to T. This parapet is still 5 ft. high in places; the original surface is plainly seen on the scarp batter.

The southern part of the T, U defence is a plain scarp clear of the fosse, and 16 ft. below which is a much eroded terrace. Here we lose the bush on the southern face of the ridge, the whole northern face being clear. The scarp along the southern side of O area is now 6 ft. to 12 ft. high, below which a terrace extends for some distance.

Proceeding from T to W we find a scarp 16 ft. to 11 ft. in height, at the base of which is a fosse 9 ft. wide and outer rampart 3 ft. to 5 ft high. Further on the width of the fosse increases to 10 ft. as the scarp decreases in height. Below, the sideling falls steeply away to the flat far beneath. Some parts of the scarped face are still extremely steep. The outer rampart is lost as we proceed, and the fosse becomes a terrace, to again assume the fosse and parapet form on approaching S, while below it is a short terrace 60 ft. in length. From S onward to R no lateral terrace formation is noted. At R commences a shattered terrace about 12 ft. in width, the inner scarp of which is some 15 ft. in height. This terrace ends abruptly at the next fosse, whence we follow a steep face, broken some 60 ft. below the summit by small terraces, probably hut sites with no defences. Approaching J the upper terrace is again encountered, which becomes a secondary terrace under Z area, where it divides into two, the upper one running under X area into the F, G fosse, with a rampart 6 ft. to 10 ft. wide along its outer edge, the lower one extending to fosse D, E. These terrace formations show scarps up to 20 ft. in height, but are much eroded.

With regard to the earthen parapet on the brow extending westward from S to the N, R fosse, this was probably an extra defensive item to compensate for the lack of any outer defence. The Maori engineer had several methods of strengthening weak parts of a line of defence.

A remarkable feature in this old fort is the fine condition of the larger fosses, of which some of the scarps or walls are almost vertical. Indeed this is the most interesting of the many forts examined in this district.

Local bushmen state that, in the forest country between Urenui and the Whanganui river are many apparently very old forts, all small and forest covered, with trees of considerable size growing in the works. In these places are many store pits excavated at the bases of the trench scarps.

Trees mentioned above:—

Mapau = *Myrsine Urvillei*
Kohe = *Dysoxylum spectabile*
Karaka = *Corynocarpus lævigatus*
Tawhero=*Weinmannia sp.*
Mahoe = *Melicytus ramiflorus*
Rewarewa = *Knightia excelsa*
Mamaku = *Cyathea medullaris.*

Okoki Pa.

This is one of the famous forts of the Taranaki district, and is said to be a very old one. A tradition is extant that it was formed by the earliest native settlers in these parts. All these forts in the Urenui district herein described were occupied for generations past by members of the Ngati-Mutunga clan. Okoki was occupied as late as the 'twenties' of last century, for we know that a portion of the above clan was living there in 1822, when the Motunui fight occurred in that vicinity. Some interesting notes on this old stronghold may be found in *The History and Traditions of the Taranaki Coast.* According to that work the chiefs of Okoki in

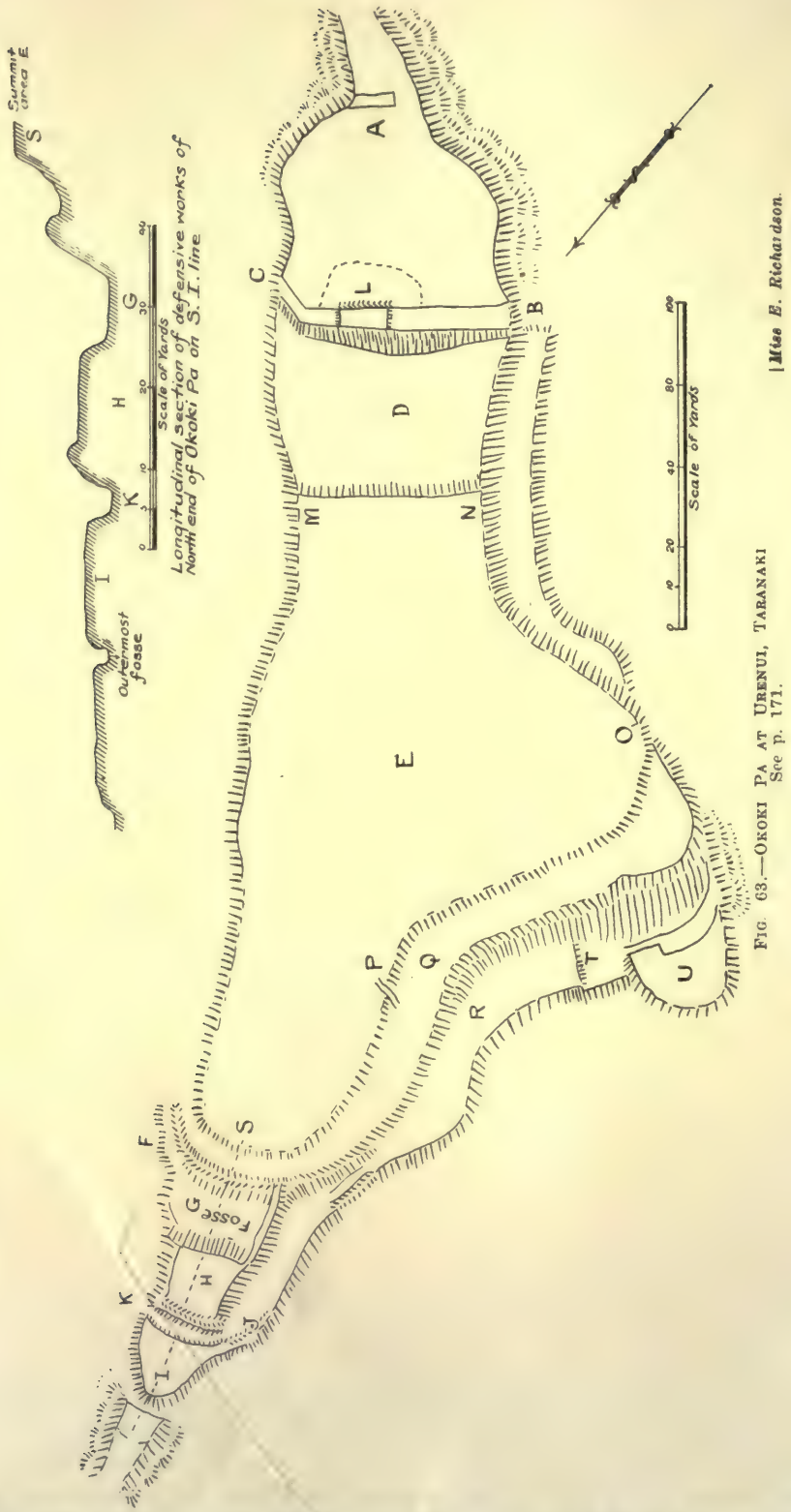


FIG. 63.—OKOKI PA AT URENUI, TARANAKI
See p. 171.

1821 were Rangi-wahia, Whakapaki, Te Awa-roa and Koromiko. Okoki is a stronghold of much interest on account of its antiquity, its well preserved works and picturesque appearance. It is situated about N.E. by E. from the township of Urenui, on the right bank of the river of that

name. It is a ridge fort, the ridge lying about S.E. by N.W. The former end falls sharply to a bend in the river, the latter to a low saddle. The whole eastern face of the ridge is a very steep bluff, at the base of which flows the river. The fortified area is now almost entirely bush clad, the principal timber being *rewarewa* or honeysuckle, trees of which are seen up to 2 ft. in diameter at 2 ft. from the ground line. These are growing on the flat summit of the fort and must have so grown since the place was deserted probably about 80 years ago. On this summit area are seen several old posts of *puriri,* hollow but still showing much sound wood, that were probably supports of *pataka* or elevated storage huts. These are the only remains of woodwork pertaining to former occupation now surviving. The *puriri* (*Vitex lucens*) is a very durable timber. See Fig. **63**, p. 172.

Commencing at the S.E. end we advance up a narrow spur to find, at a spot where the spur widens out abruptly, an outer defence similar to the first one encountered at Otumoana. A fosse has been excavated half way across the narrow part of the spur. Doubtless the entrance here was by way of the unexcavated part of the spur, which would be defended by a stockade that would be continued along the brow of the fosse and round both sides of A area on the top of the scarp. Such stockades would certainly be erected along the brows of all scarps shown on the plan, as also on the brow lines of the fosses. It is also probable that lines of stockades divided E area and the long terraces into various sub-divisions.

A area is 55 yards long, its inner end being marked by a strong defence containing some unusual features. The B, C fosse is 16 ft. wide near B and narrows to 10 ft. as it advances. Its inner scarp is a perpendicular wall of 26 ft. in its central part, lessening toward B and C in sympathy with the natural form of the spur. A large section of the spur has been here excavated in order to form this huge scarp. The outer scarp of the fosse is perpendicular and 5 ft. to 6 ft. in height. At a point 30 yds. from the western end of this fosse is a sudden rise of over 3 ft. in the level of the trench floor. This continues for 12 yds., and then comes a drop of 4 ft. thus leaving a raised block area 4 ft. high and 36 ft. in length in the fosse. Along the top of the outer scarp for the length of this raised area, extends a low earthen wall, evidently protective in design. The sub-area marked L, and contained by a dotted line, is raised some feet above the level of A area, and was probably bounded by a stockade as an additional bar to the advance of an enemy up the ridge. East of the central block the fosse continues and angles off to C. It is possible that this central block of 12 yds. was not excavated on account of the presence of somewhat hard sandstone. This fort was not so well explored as it should have been, owing to heavy rains, which have a demoralising effect on note books and note makers.

The eastern part of the fosse is 14 yds. long and carries an outer scarp of 8 ft. The passage or means of communication between A and D areas was not observed, but this defence must have been practically impregnable to a force armed with native weapons.

To reach area D means a rough scramble up the precipitous scarp, a process much assisted, however, by the forest growth, to which the modern escalader can cling. Area D perched far above A is a perfectly flat terrace measuring 19 yds. by 25 yds. The steep sides of these areas have assuredly been artificial scarps surmounted by stockades, but all are now covered with dense forest growth. Thirty feet below the level of D area is a terrace 16 ft. and upwards in width, extending from B past D area and on under E area to terminate at a perpendicular cliff at the projecting point O. The M, N line of defence is a perpendicular scarp 10 ft. in height, and on ascending this the observer finds himself on the fine level expanse marked E, the highest part of the fort. It is 165 yds. in length and 97 yds. wide at its widest part. From this fine residential area the inhabitants enjoyed a delightful view of forest, mountain, plain and ocean, such a view as Taranaki alone can boast of. With its terraces, scarps, fosses, stockades and commanding situation, Okoki must have been a remarkably picturesque stronghold when the descendants of Mutunga were in residence. This formerly busy area is silent now, and covered with a forest growth of *rewarewa, kohe, mamaku, mapau, hangehange, kawakawa, Cordyline,* etc.

Rewarewa trees of 18 inches in diameter are fairly numerous, and one double growth is 8 ft. in circumference at 3 ft. from the ground.

At P is a narrow sunk way, an excavated passage 4 ft. wide and from 4 ft. to 8 ft. deep by means of which access was gained to the summit area from Q terrace. The stockade along the brow would extend across this space while the aperture below it would be blocked by some form of gate or bars. Terrace Q is a fine residential area, 33 ft. wide where the subway leaves it, and as much as 40 ft. at some parts. The inner scarp of this terrace is 10 ft. high and very steep, the addition of a 10 ft. stockade on its crest would render it a very formidable defence. The outer scarp of Q terrace, the drop to terrace R, is from 16 ft. to 50 ft. and also very steep, in parts perpendicular. From these fine residential terraces the view westward across the Motunui plain to the ocean beyond is a very fine one. That plain of Motunui was the scene of a fight in 1822, when the Okoki folk joined other clans of the Ngati-Awa tribe and there defeated an invading force from the Waikato district. On the bank of the Mangatiti stream, near the western side of Okoki, stands a *titoki* tree on which bodies of the slain invaders were hung prior to being cooked and eaten.

In the narrow subway leading from terrace Q to the summit is growing a *rewarewa* tree (*Knightia excelsa*) 2 ft. in diameter.

All the eastern face of the *pa* is a steep bluff, difficult to ascend when clear of timber growth, easily defended, and lacking terraces. The rounded extremity of the summit area at S presents a scarp that has been 16 ft. or 18 ft. in height, but is now much eroded. At the base of this scarp is a wide fosse much clogged with detrital matter, with a wall outside it of 4 ft. to 5 ft. in height. The Q terrace formation runs into the western end of this fosse, while the eastern end emerges at the brow of a precipitous bluff. Crossing the wall or parapet north of this trench we find a steep drop of 26 ft., this imposing scarp resembling the B, C line of defence at the other end of the fort. On the eastern side of this part is a short terrace about 8 ft. wide, and the hillside has been cut away to form a precipitous scarp of nearly 30 ft. The fosse marked G is 25 ft. wide, an unusually wide one, with an outer wall scarp of 9 ft. Its eastern end gives upon a precipitous drop of 30 ft. into a huge hole in the hillside, which hole may be an artificial excavation; it is about 50 ft. wide. Fosse G is 24 yds. long but at the western side of the ridge it has not been cut through, hence it does not impinge upon the J, R terrace. A causeway composed of the original formation has been left at the western end of the fosse, as shown on the plan. This causeway is 10 ft. wide and 7 ft. above the bottom of the fosse, to which it presents a wall of that height. Its outer or western side shows a steep scarp drop of 16 ft. to 18 ft. to the terrace below. This raised causeway form of connection between two fortified areas of a fort is occasionally seen, and would unquestionably be protected by stockade lines and strong barriers. Thus when, at night, all entrance passages were blocked, each division of such a fort as Okoki was really a stronghold in itself.

H area is much lower than S and the ridge is now falling to the saddle north of I. H is a level terrace area with a 5 ft. parapet on its outer or northern limit, and steep scarps on its eastern and western flanks. Its outer scarp is 16 ft., at the base of which is a fosse now 10 ft. wide at the bottom and presenting a counter scarp of 8 ft. Ascending the latter lands us on I area, the outermost fortified part of Okoki at its northern end. This area is but 14 yds. in length, with a steep fall away on both flanks. The fosse of K, J deepens abruptly at its western end and has an outer wall which is a horn or continuation of I area level. The fosse at the northern end of I area, is 8 ft. wide across the bottom, with an inner scarp of 10 ft.; counter scarp 6 ft., and this is the outermost defence. The cross section sketch of these northern defences makes the system clear, and also shows how the scarp brows have eroded, more especially on the upper part of the ridge.

Outside the I area the ridge top seems to have been levelled for some distance, after which it descends to form a saddle, to rise again further on.

Just below the level of the western end of the K, J ditch commences a terrace that runs under H and G, for 45 yds., at which point it resolves itself into an upward sloping passage 10 ft. wide, with a rampart on its outer side. This ascent leads us to terrace R which lies 14 ft. higher than the preceding terrace. Here we note a high steep scarp running up to Q terrace on our left. R terrace extends along the western hill face, some 50 ft. below the Q terrace level, and preserving a width of about 40 ft. until we reach the small area marked T. Here the level drops 6 ft., continues so for 12 yds., then rises 12 ft. by a steep scarp to a flat area (U) as shown on plan. Twenty yards then brings us to the end of this terrace system, which runs out at a steep cliff overlooking the river. But along the inner line of this small final area, skirting the base of the lofty and steep scarp under Q terrace, a curious passage or sunk way has been formed. This commences as a narrow deep trench 4 ft. wide and 7 yds. long, then widens out to a deeply excavated space 18 to 20 ft. wide and 8 ft. deep. The purport of this singular fosse is by no means clear, it isolates the elevated area U, but only from the steep bluff, from which side no attack could be expected or delivered by an enemy assaulting the fort.

There are some very interesting features connected with this fort, and it would repay further study. The high precipitous scarp under Q terrace betrays no sign of a former means of access from the lower terrace. Such may have become eroded past recognition, or Q area may have been entered from H by way of the causeway at the western end of fosse G. Such problems are worthy of study on the ground, but abominable weather prevented a long examination.

On the level *tihi* or summit area are many store pits of the *rua kopiha* type about 8 ft. deep, with dome shaped roofs, the descent into these being of the usual 'well mouth' kind. In some are seen steps of solid earth whereby to descend or ascend. Some rows of pits are connected by small passage ways through an intervening wall of 30 inches or so in thickness. These pits are of circular form, and some have a raised ledge or banquette round them, the use of which is not clear. The different forms of storage pits used in different districts present quite an interesting study.

There are many other old forts in this district that would repay examination, as also many more on the coast line northwards.

It is just possible that the trenches on the inner sides of A and U areas were excavated after the acquisition of firearms, to be utilised as rifle pits.

Of the Okoki *pa* Mr. Smith writes:—"On the end of one of the spurs running down from the ranges, was the celebrated *pa* called Okoki, now covered with wood about fifty feet high, but in the early years of the nineteenth century it was very strongly fortified with palisades and steep banks, cut out of the solid earth. Immediately under the *pa,* on the southeast side, runs the Ure-nui river, which curves round, making a bend in which the *pa* stands. The top of the *pa*, which is quite level, is about two hundred feet above the river. There were at least three rows of palisades around the *pa* in former times, erected on the edge of the terraces that had been cut out and levelled so as to admit of house sites. On the southern face of the *pa,* the scarped bank sloping down from the platform on top was at least fifty feet in height. Down the face of this escarpment is a deep artificial cutting about four to six feet wide, leading down from the upmost platform towards the river which was used as the entrance to the *pa,* and the way by which the inhabitants fetched their water. It is so steep that there must have been steps in it originally. It was, no doubt, protected by palisades, and would be easily defended. The platform on top is about two hundred yards long, by a varying width of from fifty to eighty yards. Here was the site of most of the houses, but all the terraces, which are about ten to fifteen yards wide, would also contain many houses. Altogether this was one of the strongest *pa* known.....The Ngati-Mutunga were occupying it in 1821. This clan also built and owned the *pa* called Ure-nui, on an isolated hill just at the mouth of the river, on the north side; Pohokura, a very strong *pa* on another isolated hill a quarter of a mile to the east [?] of the last; Te Rewa, another strong *pa* just across the river from Pohokura; Kumara-kaiamo, within the present township of Urenui; and Pihanga, on the south bank of the river

near the mouth, which was occupied by the Native Contingent under Captain Good, in the middle 'sixties' of the 19th century. There are numerous other *pa* in the neighbourhood, but the above are the principal ones that still remain, and add so greatly to the interest of the scenery of that picturesque country." The names of the Pohokura and Urenui forts in the above narrative should be transposed.

Bay of Islands District.

It will be seen that in this far northern part of the island are found two types of fortified positions. We encounter here the terraced volcanic cones showing no exterior defensive earthworks except scarped faces, resembling those of Mt. Eden, One Tree Hill, Mangere, etc., and also others somewhat similar to the forts seen in the Taranaki and Bay of Plenty districts. In those of the latter type are noted such exterior defences as escarpments, parapets and fosses. It appears to be a fact that more terracing occurs in the *pa* of this district than is generally observable in the Bay of Plenty series, which causes the northern series to more closely resemble those of Taranaki. This remark applies to those of the second type as above mentioned.

About a mile N.W. by W. from the township of Kawakawa is a very well preserved ridge fort situated on a long spur extending from a high range down to the river flat. The neolithic engineers who selected the site were assuredly no mean exponents of the art of fortification. They chose a knoll of the spur having a low saddle at the upper end, and thus possessing the advantages of a hill-top or isolated hill. The two flanks present extremely steep slopes down to a ravine on the south side and a valley on the north side. The spur is but a narrow topped one, and hut sites were obtained by excavating the upper part so as to form flat areas of differing levels, thus there are fifteen such areas along the summit, besides several longitudinal terraces. The cross defences consisted of scarps, fosses and stockades; the longitudinal defences of scarps and stockades. Parapets or ramparts are but little in evidence. Roughly the spur extends eastward from the range. See Fig. **64**, p. 177.

Proceeding up the spur from the road junction the first part of the works met with is the trench cut across the spur top at A with an inner scarp of 8 ft. This fosse extends about 10 yds. down the steep slope on the northern side. The reason of this extension is by no means clear, though it may have been held in order to prevent an enemy gaining access to the upper part of the fosse, or to render a flank attack more difficult. We shall encounter other examples of such fosse extension further on.

Ascending the scarp at A lands us on a small artificially levelled area 12 yds. long and 6 yds. in width, with a low parapet 2 ft. high along its northern edge, below which is a steep scarp of 9 ft. Lower down the hill side are several very small terrace formations, probably hut sites. The soil is a stiff clay. The whole southern side of the *pa* from A to L overlooks a steep slope down to a deep gully. Such a face would have its upper part scarped as steeply as the material would permit of, and be surmounted by a stockade.

C area is some 18 inches below the level of B area and is a small flat space about 6 yds. square. On its north side is a steep scarp of 10 ft. below which is a small terrace only 7 ft. in width, being partially blocked with debris resulting from the erosion of the scarp.

The eastern end of D area is below the level of C and the defences between them consist of a steep 6 ft. scarp, at the base of which is a trench about 6 ft. wide. Along the western brow of the trench is a parapet, now only 18 inches in height. Areas C and D apparently occupy what was a slight dip in the original surface of the ridge summit, or the ridge was so narrow here that it had to be excavated to a greater depth in order to acquire the desired width. Under the northern end of the C, D fosse a singular excavation has been made in the form of a huge trench 16 ft. wide, extending from the base of the scarp down the hillside for 6 yds. or 8 yds. to end at the brow of a precipitous descent. These unusual lateral defences are a feature of this *pa*. If held by the garrison then any force endeavouring to deliver a flank attack would be compelled to advance straight up a precipitous hill side, a proceeding that might be easily discouraged.

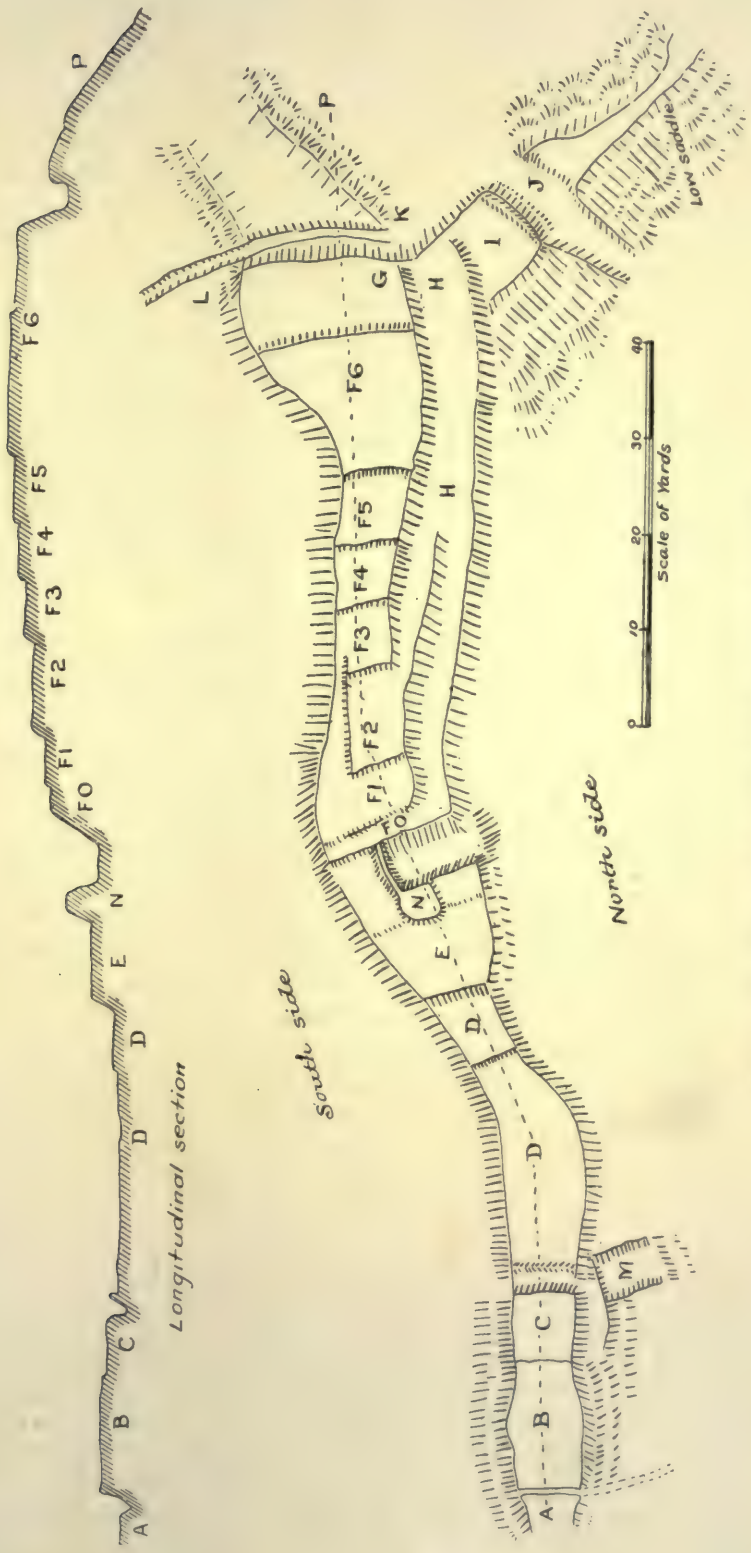


FIG. 64.—AN OLD PA AT KAWAKAWA, BAY OF ISLANDS DISTRICT.

See p. 176.

[*Miss E. Richardson.*

D area is 30 yds. long and 6 yds. to 8 yds. wide. At its western end a sub-area 6 yds. in length is 18 inches higher. The hillside to the south shows a steep slope, while the northern side still shows signs of a 10 ft. scarp.

To gain access to E area from D it is necessary to ascend a scarped face of nearly 10 ft. in height, originally almost perpendicular, apparently. This E area is but 15 yds. in length and 6 to 14 yds. in width, but presents some very unusual and somewhat puzzling features. The western end of the area is about 18 inches higher than the eastern half. The latter is level, while the former slopes upward to the west. Now in the middle of this part a block of the original formation has been left standing. See N, on plan. It is about 11 ft. by 9 ft. in size and of considerable height. It has been a rectangular block and shows clay overlying stone rubble. From the S.W. corner of this N block a wall of the original formation some 3 ft. in thickness has been left standing and extends across to the scarp at FO. Presumably this was a causeway to enable persons to pass from the summit area of F to the outstanding block. This block, marked N on the plan, was probably for defensive purposes, or it may possibly have been the means of access from E to F by means of using a ladder to ascend to the top of N.

Between the block N and the high scarp at FO is a fosse 12 ft. wide and 3 ft. to 4 ft. deep. This extends from the wall like causeway to the northern side of the area. This northern side is much broken away, but the southern face still shows signs of having been scarped steeply for 10 ft. or so. The scarp on the western side of the fosse is about 16 ft. in height but it has been higher. At its summit is the FO terrace.

F0 to F6 area is the highest part of the fortified position and is divided into seven flattened sub-areas of different levels, thus much resembling the Tapa-huarau fort at Ohaeawai. F6 is the actual summit, from which one descends to G, H, I and J.

The narrow terrace marked FO is but about two yards wide and continues round the northern side of the hill below the summit to connect with H terrace.

F1 is about 2 ft. higher and 5 yds. wide. It continues in a narrow form round the south side of the summit area for some distance. The hillside to the south is very steep.

F2 is 9 yds. long, *i.e.*, E. and W. and 5 to 6 yds. wide, and runs round the northern side of the hill as a terrace above that of FO, widening as it goes. The lower terrace seems to have been reduced in width in order to accommodate the upper terrace. The lower terrace has been 3 yds. wide and probably more, but shows the effects or erosion, as is usual in such formations when not protected by a growth of vegetation.

Ascending a scarp of 4 ft. brings us on to F3 sub-area which is but 6 yds. in length and somewhat less in width. The terrace on the south side from F1 ends here.

Another rise of 2½ ft. lands us on area F4 which is the same length as the preceding one, but somewhat wider.

F5 lies 2 ft. higher and is 7 yds. in length. On its northern side is a perpendicular 8 ft. scarp down to the terrace. The two terraces become one below the east end of F5, and that one is about 4yds. wide.

A rise of 4 ft. now brings us to F6 the highest part of the *pa*. It is 22 yds. long, but 8 yds. of the western end is at a lower level by about 2 ft. Width from 6 yds. to 16 yds. Some of the original scarping is discernible at the S.W. corner near L. The western end is marked by a high scarp falling into a fosse. At G a sloping way leads down to H terrace, here 18 to 20 ft. wide. The inner scarp of H terrace is here 13 ft. high, while on the outer side the hillside falls away steeply to a deep gully. At this western end of H terrace there seems to have been a subterranean store pit, the only one seen throughout the fortified area.

Area I is a small terrace 10 ft. below the level of H, and cut out of the sloping spur descending to the low saddle. Its N.E. face presents a steep scarp, and a sloping causeway leads up to terrace H. A low parapet runs along the brow overlooking the fosse J. Shell refuse on the slopes show that a part of the food products utilised was obtained from the coast.

We now come to the outermost defence on the main ridge of the spur. This is a deep wide fosse at J. The spur falls somewhat steeply from G to J and from J is a more gradual slope for 16 yds. to a low saddle, from which the ridge rises again towards the west. J is a fosse 12 ft. wide at the bottom, its inner scarp being from 12 ft. to 16 ft. in height, originally much higher, and counterscarp 4 ft. This fosse does not carry a level floor but slopes downward and is continued for some distance down the hill side as shown on the plan, presumably as a defence against a flank attack, as also seen at A, M and L.

From the end of the J fosse to K runs a steeply scarped face still 10 ft. to 12 ft. in height. The sloping ground between J and K has been excavated to a depth of from 2 ft. to 4 ft., and this excavation has been carried 10 yds. down the hillside. The purport of this work is by no means clear. If the intention had been simply to increase the height of the scarp then a somewhat narrow excavation, triangular in cross section, would have served the purpose. The high and steep scarp continues on to the corner of F area opposite L. This excavation crosses a side spur that falls to the valley below. Across this spur, at the base of the scarp a fosse extends and is continued down the steep hillside for about 30 yds. beyond the *pa* defences. This fosse commences at K with a depth of about 3 ft. and has seemingly been about 8 ft. wide but is now much filled with debris; inner scarp 16 ft high. That part of the fosse extending outside the limits of the *pa* is exceedingly well preserved, is 10 ft. wide at the bottom, and 6 ft. to 7 ft. deep, with steeply scarped sides. It is apparent that all scarps in this stiff soil have originally been steep.

The extension of the deep moat down the hillside described above is a peculiarity that has been noted by Major H. Godwin-Austen in India. In an account of certain megalithic monuments seen in the Khasi hills (published in vol. V. *Journal of the Anthropological Institute*), he writes:—"Nougshai must formerly have been a large and powerful village; it stands on a naturally very strong position, and old lines of fortifications are to be traced on many sides,.... .....These old lines of defence are on a curious system: a ditch and bank have been carried forward from the main defences from 200 to 300 yards down the ridge of the spurs, thus effectually preventing an enemy working round the hillsides below the villages."

This fortified position of Kawakawa is situated far above the valleys on either side of it, and where the cultivation grounds of its inhabitants must have been. There seems to have been a modern hamlet on the lower part of the spur, now covered with a growth of scrub and fern, as shown by a number of rose bushes and *agave*.

A much smaller ridge fort was seen on a spur about half a mile S.W. by W., the defences of which include two fosses formed across the ridge and carried down the side for some distance. Possibly this fosse extension outside the fort limits was a local custom. About a mile south of the last mentioned fort is yet another ridge *pa* showing a rectangular fortified area of high steep scarps, a deep fosse across the ridge on the upper side, with a parapet on the inner or true scarp. This is a common type in the Bay of Plenty district.

The illustrations given of this fort serve to show how the Maori utilised ridge summits in his practice of the art of fortification, and how he caused the plans of such art to conform to the natural features of the ridge top. The uppermost area FO to F6 illustrates how the whole of an area was formed into level ground suitable for hut sites without doing any unnecessary work in the way of excavation. The sloping summit was cut into small sub-areas, no one of which called for any great amount of labour. The heavy defences at either end of this *tihi* or uppermost area, as noted near F0 and at the western end of F6, made it the strongest part of the fortified village home, as indeed was ever the aim of the Maori. It must be borne in mind that all scarps would be crowned with lines of stockades. This *pa* resembles in position, form and defences that of Te Potiki a Rehua at Wai-totara. Its peculiarities are its extreme length as compared to its breadth, the prolongation of certain fosses beyond the bounds of the fort, and the singular bastion like form N connected with the FO scarp by a narrow causeway. One fails

to see how the trenches extending downhill outside the *pa* could prevent an enemy force approaching the fortified village.

Old Forts of the Taiamai District, Bay of Islands.

The Taiamai district, inland of the Bay of Islands, has many interesting specimens of native fortification, some of which are in a very fair state of preservation. These include the forts of Nga Huha, Pouerua, Te Rua-hoanga, Ngaungau, Kaiaia, Te Tou o Roro, Taka-poruruku, Tapa-huarau, Nga Puke-pango, Maunga-turoto, and Maunga-kawakawa. There are yet others that were not visited by the observer, neither were their names ascertained.

The reason why so many people occupied this district seems obvious. The low lying undulating lands of the Taiamai basin are in great measure composed of fertile soil suited to the cultivation of the *kumara*, while much of the surrounding land is of an extremely poor quality. The hill forts of Tapa-huarau and Nga Puke-pango are situated on sterile ridges, but at their base lie areas of good volcanic soil that were utilised for cultivation purposes. Many of these old forts are situated near the village known as Ohaeawai, the native name of which is Taiamai. The former name is that of a small settlement of natives about three miles away, which place has been re-named Ngawha in order to avoid confusion. Taiamai derives its name from a huge boulder of volcanic rock situated in a paddock about a quarter of a mile S.E. of the Ohaeawai hotel. This prominent rock stands 10 to 12 ft. high, and was formerly an *uruuru whenua*, a place at which passers by deposited small offerings such as a branchlet or tuft of grass, at the same time reciting a charm in order to placate the spirits of the land, or some *genius loci* that might cause an affliction such as bad weather, if neglected. Smaller boulders occur in the vicinity of the Taiamai rock, but no other big outstanding one. The surrounding flat has been cleared of stones in past centuries to enable the land to be cultivated, the stones having been piled in heaps.

The series of old forts on the northern side of the main road near Ohaeawai township is strung along the summit of a ridge that for some distance continues parallel to the road and then turns northward. The whole length of the higher part of this ridge summit has been fortified and occupied in past times, the scarps and terraces even now imparting a picturesque appearance to the hill, induced by the deeply scarped summits standing out clearly against the sky line, and the series of excavated terraces on the slopes. To the eastward is seen the highly picturesque volcanic cone of Pouerua, its steep slopes carved into many terraces by the men of yore. To the south-west is the similar cone of Maunga-turoto, also terraced; while westward, against the sky line the square scarped summit of Maunga-kawakawa arrests the observant eye. In noting the regular terraces of the ridge forts one sees as many as 16 such terraced formations, one above the other, in symmetrical order, but on the volcanic cones no such regularity is detected, the terraces being comparatively short and irregular in situation. Apparently the object was not to form long continuous terraces round the slopes of these cones, but to excavate short ones at differing levels, thus rendering the whole the more difficult to take by assault. These volcanic cones in fact reproduce in the far north the conditions obtaining on those of the Auckland isthmus.

Taka-poruruku Pa.

The above mentioned ridge running parallel with the main road at Ohaeawai swerves northward somewhat in the form of the letter L. The vertical stroke represents the part parallel with the road and occupied by the Tapa-huarau *pa*, while the horizontal part is the site of Taka-poruruku. Where the ridge turns almost at right angles it drops to a low saddle to rise again for some distance ere it descends finally to a swampy creek. This elevated part has been selected as a site for a fort on account of it possessing all the advantages of an isolated

hill. The plan shows it to be a narrow ridge the outer defences of which consisted of high steep scarps surmounted by stockades. The two sides of the narrow ridge have been excavated so as to form two high parallel scarps, and the two narrow ends have been treated in a similar manner, thus transforming the upper part of the ridge into a square-cut high-walled block. This imparts to the ridge a singular appearance when viewed from some distance. The ridge rises from a low saddle south of B to area 8 (Fig. **65**, p. 182) and then descends northward. The whole of the fortified area has been rendered habitable by means of levelling the summit area and excavating all other parts into terraces of differing levels, forms, and dimensions, much in the same style as the Kawakawa ridge fort. The whole ridge presents a stiff clay formation which tends to preserve scarps, walls and ditches, but the symmetry of these features has been in many places much impaired by the operations of gum diggers, a class that has but scant respect for archaeological interests.

Advancing from the low saddle south of the fort the first part of the defences is encountered at B. Here the rising ridge has been excavated so as to leave an outer terrace 18 ft. in length with a scarp of 10 ft. extending from A to C. At the base of this scarp is a fosse, or rather two such, 7 ft. wide and now only 2 ft. deep. The one on the western side is 16 ft. long, that to the east is 12 ft. while between them is an unexcavated part 12 ft. wide. One would naturally suppose that this was left as a causeway over which to enter the fort, and expect to find some evidence of a sunk way by means of which to pass the scarp, but no such evidence exists. If an entrance to the fort existed here, then the steep scarp, undoubtedly higher formerly, was probably scaled by means of the primitive Maori ladder, a notched pole or beam. The corner at A is much dilapidated and broken down. The eastern end of the fosse bears a pit-like appearance; the outer end may have become filled with debris, or possibly an approach to the small terrace on the eastern slope was here formed.

Ascending the 10 ft. scarp brings us to the first of the series of small terraces, marked 1 on the plan. This terrace is 18 yds. east and west and but 14 ft. in width. On the eastern and western scarp brows of areas 1 and 2 are the remains of parapets, now but 2 ft. or so in height, but probably much abraded. They may have been built up or be a part of the original formation left when the terraces were excavated. Such parapets would heighten considerably the underlying scarp, and, if not too high, would afford protection to defenders posted behind them without interfering with their use of the spear.

A scarp of 3 ft. brings us to the second terrace. Here is an area formed on two different levels, that marked D being 2 ft. higher than the other part. The eastern part is 18 ft. wide, *i.e.*, east and west. The raised part D is 10 yds. east and west and 6 yds. across the other way. The lower level is narrow at the outer side of the terrace, and on the western side connects with a fosse or sunk passage with outer wall now only 2 ft. high. Outside this wall or parapet is a scarp of 10 ft. in height, at the base of which is a trench 4 ft. wide and 4 ft. deep, cut through a small flanking spur. The protected passage above seems to have afforded access to area 2. The eastern scarp of 2 is about 16 ft. in height and has a small terrace below it.

A low scarp of 2 ft. brings us up to the eastern part of area 3 which measures 10 yds. by 6 yds. and is not level but slopes upward somewhat to the area 4 scarp. We here lose the parapet along the eastern scarp brow. The higher part of 3 is 12 yds. east and west and outside it is the passage already described, and from which access to 3 may possibly have been gained.

Ascending a 4 ft. scarp from the eastern end of 3 we find area 4 to be 19 yds. east and west, a 3 ft. drop to the western passage way, and a curious block of unexcavated clay 5 yds. by 4 yds. left 3 ft. high in the middle of the area. It is possible that access to area 5 was by way of this small elevated area. The two dotted lines indicate a diminutive trench that may have been a drain round a hut.

The area 5 terrace is 20 yds. east and west and 9 yds. across. On the summit of the eastern scarp is a low parapet; scarp 10 ft.; a trench at its base is much filled with debris. Curiously enough no scarp is seen at the western end of this area, the ground sloping down 30 ft. to a

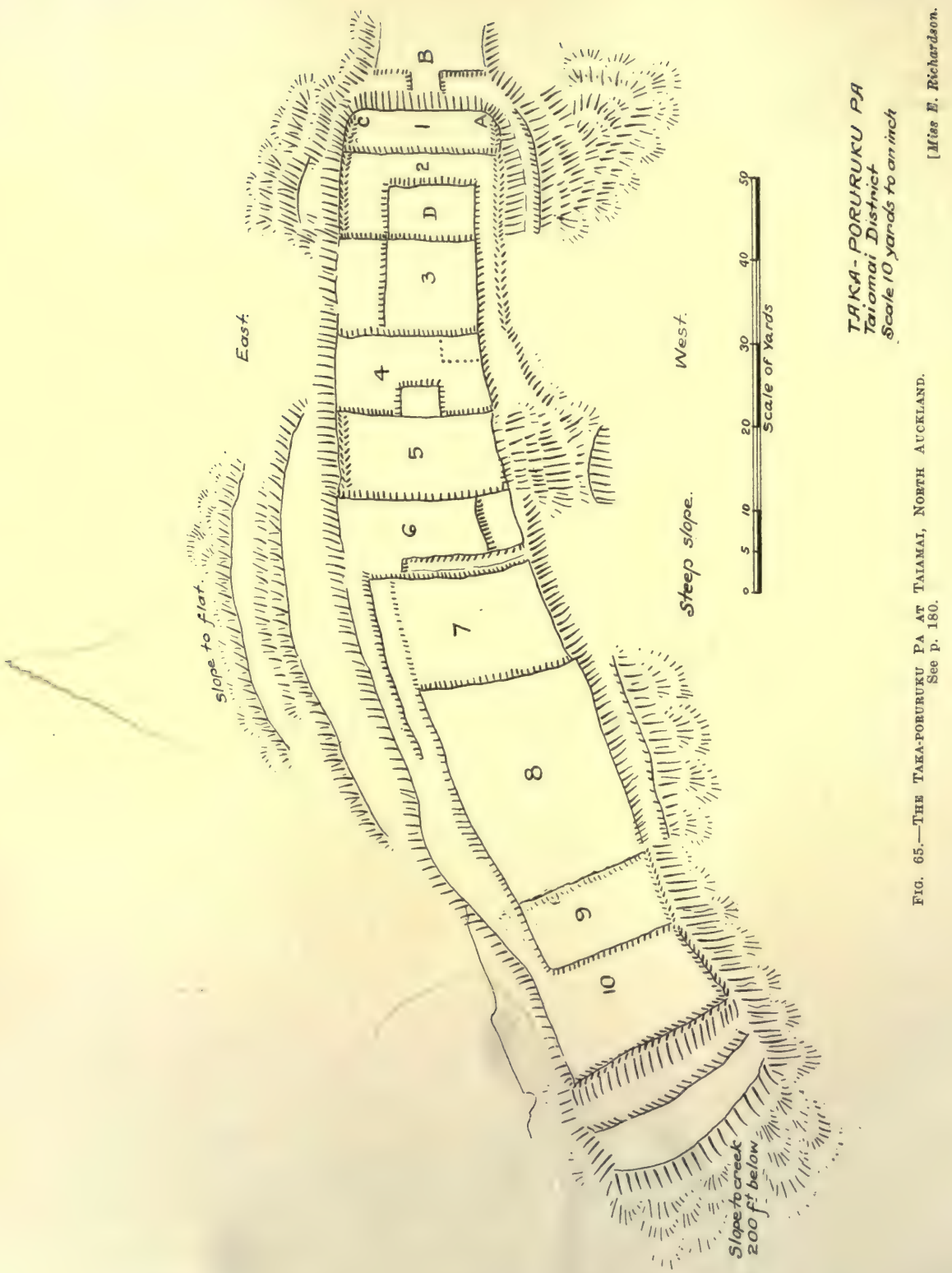


FIG. 65.—THE TAKA-PORURUKU PA AT TAIAMAI, NORTH AUCKLAND.
See p. 180.

precipitous drop, the head of an old time earth slide. Presumably this extent of scarp has been destroyed by pigs and gum diggers, and such like iconoclasts.

Area 6 is a terrace 22 yds. by 7 yds. The western end is 3ft. lower than the eastern part. At the base of the scarp on the northern side is a trench 4 ft. wide and 2 ft. deep, with debris in it, and which extends to within 7 yds. of the eastern scarp.

Area 7 is 3 ft. higher than 6 and measures 18 yds. by 12 yds. while on its eastern side are two terraces, the upper one 3 yds. wide and 2 ft. below the level of 7. The lower terrace is but 2 yds. wide and runs from area 6 on a rising grade to join the upper terrace opposite 8, and this terrace runs along the eastern side of the ridge and into area 10, thus are areas 6 and 10 connected, while 7-8 and 9 form a self contained area in themselves. Below the eastern scarp of 10 ft. and outside the fortified position, are two terraces as shown on the plan, the upper one 20 ft. wide, the lower one somewhat narrower.

The scarp between areas 7 and 8 is from 3 ft. to 5 ft. in height. The latter area is the *tihi* or highest part of the *pa;* from here it falls to the northern end. It is 25 yds. by 16 yds. and shows many levelled hut sites, for it is somewhat rounded, not having been carefully levelled as have the other areas. Its eastern scarp drops 6 ft. to the terrace below; its western side shows a steep scarp of from 10 ft. to 15 ft. below which is a fosse 6 ft. wide and 3 ft. deep, but containing much debris. There are some signs of a parapet along the crown of this west side scarp. The scarp under the eastern terrace is 15 ft. in height.

Area 9 is a terrace 2½ ft. below the level of 8 and 16 yds. by 9 yds. in size. Its western scarp head carries a parapet now 3 ft. high that continues along area 10.

Another drop lands us on area 10 which is 19 yds. by 11 yds. and has a parapet on two sides, as shown on plan. These walls are now about 3 ft. in height but have assuredly been higher. They probably extended further originally. Both 9 and 10 have been carefully levelled. The north side parapet stands above a scarp of 12 ft. now much eroded, and the fosse at its base is nearly filled up. Outside the trench is a small terrace, below which the ridge falls steeply to a swampy creek far below. The high scarp on the northern side of area 10 is the outermost defence at this end. Under this end of the fort, on the western side, are some fine residential terraces, up to 30 ft. in width. Such places were often vacated on the approach of a hostile force.

Curiously enough only one store pit was seen about this old fort. Very few were seen at any of the old forts of this district, and all seem to have been of the semi-subterranean type. Was surface storage of crops practised by these folk?

On the terraces of the old forts of these parts the observer often notes the fireplaces (*takuahi*) that formerly were used in all dwelling huts. These consist of four stones surrounding a small rectangular pit in the centre of the earthen floor. These stone-lined pits were used to contain a charcoal fire. If wood fuel was used, then timbers were selected that burn with little smoke. The interior measurements of such pits are usually about 12 x 18 inches. One unusually large one, 24 x 16 inches, was seen at the Ruahoanga *pa.*

The Tapa-huarau Pa.

From the low saddle at the southern extremity of Taka-poruruku the spur rises to a ridge lying east and west parallel with the road. This ridge has been fortified and occupied from its supporting spur at its eastern extremity westward to where a low saddle connects it with a high range. There are really three *tihi* or summit areas in this extent, each of which would undoubtedly have a distinguishing name. All the old forts in this vicinity are said to have been occupied by the Ngati-Pou clan. Though connected by residential areas probably stockaded, yet each of the three fortified summits, with its attendant terraces and outworks was really a self-contained fort in itself. Commencing at the eastern extremity of the ridge we describe the first summit fort with its outworks, distinguishing it as Tapa-huarau No. 1 *pa.* See Fig. **66** p. 184. From the summit of this fortified area a flank spur trends down to the flat on the

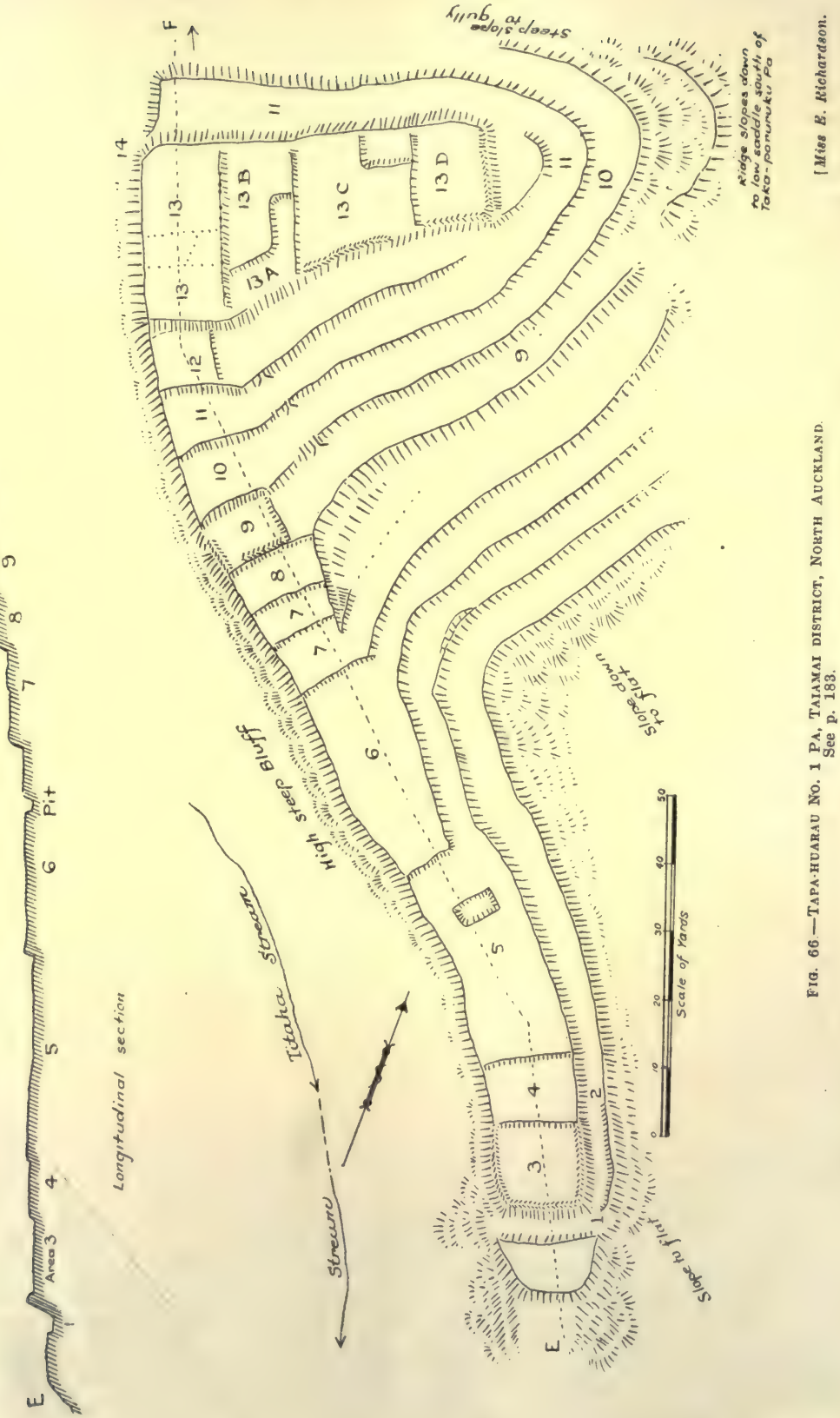


FIG. 66.—TAPA-HUARAU No. 1 PA, TAIAMAI DISTRICT, NORTH AUCKLAND. [Miss E. Richardson.
See p. 183.

eastern side. The greater part of that spur has been included in the *pa;* its lower parts carry a gentle slope, but nearer the summit the rise is a steep one and the scarps higher. Its southern or S.W. side is a very steep slope of about one in one, hence it carries no terrace formation and was easy to defend. The other side has a much easier descent and was excavated into a fine series of residential terraces.

Proceeding from the toe of the spur near the Titaha stream, one ascends the spur for about 150 yds. to a diminutive terrace formation 80 ft. above the flat. This may or may not have been stockaded for defence; if not then the first line of defence was the scarp of the area marked 3. (As we proceed up the spur the right hand is termed the northern side, though really facing about N.E.) The spur continues as a narrow ridge as far as the western part of area 6, where it merges into the slope of the hillside, and this has been taken advantage of in order to excavate a series of terraces connected with the small fortified areas on the spur top and the brow of the steep southern slope.

At the eastern end of area 3 is a scarp of from 9 ft. to 12 ft. in height, at the base of which is a trench 12 yds. long cut across the spur top. It is now but 2 ft. deep and seems to contain much debris, the result of erosion of the scarped face. Of course none of the scarps retain their original features in these forts not protected by a forest growth. By processes of abrasion and erosion scarp brows have been reduced and the base of each has thus acquired a form of talus that much reduces the angle of the lower part of the scarp.

The fosse at 1 is carried on as far as 2 for 15 yds.. It is now 2 ft. deep; inner or true scarp 9 ft. The fosse then developes into a terrace running along the N.E. slope of the spur and then angling off northward round the wide face of the hill.

Area 3 is the lowest and outermost fortified area of the *pa.* It is 12 yds. by 11 yds. in size and quite level. Along its three outer edges, on the scarp brows, are the remains of parapets from 1 ft. to 4 ft. in height. These extra defences of this area have been formed in order to strengthen this exposed salient. A force attacking from this side could not advance up the extremely steep southern slope, which has a fall of about one in one, and on the northern side was a double line of defence. Hence the advance would be up the ridge of the spur and so the salient area 3 would be the principal point of attack. The defenders of this area, stationed ten feet or more above their opponents, and protected by parapets and stockades, would be holding a position that was practically impregnable in pre-gun days. Along the inside of the northern parapet there seems to have been a banquette (a highly unusual feature), possibly owing to the superior height of the wall on that side. In most cases the means of communication between the different areas cannot now be located on account of the tracks formed by the passage of stock, and erosion.

Area 4 is divided from 3 by a low scarp of 2 ft. and is another artificially levelled area 8 yds. by 13 yds. in extent. This area loses the parapet defences and depended on scarp and stockade, as did the upper ones.

Area 5 is but 1½ ft. higher than 4, another levelled area 30 yds. long, on which is an old store pit 18 ft. by 14 ft. Its northern side shows a scarped face of 12 ft. below which the terrace runs 16 ft. wide. The southern side is still the same high steep bluff which continues right along to area 13, the highest one. Opening out of the western end of area 5 is a terrace that runs under area 6 and above the first terrace to swing round to the north in sympathy with the latter.

A scarp of 4 ft. lifts us to area 6 another levelled expanse 30 yds long and 8 yds. to 13 yds. wide. The narrowness of its eastern end is owing to the excavation of the terrace on the northern side. A hut site seems to be yet discernible at the western end. Another terrace opens out of area 6 and extends round the hill side above the two already mentioned.

A steep scarp of 6 ft. lifts us to area 7 which is 13 yds. long but is in two levels as denoted by the slight scarp across the middle. These upper terraces are less extensive than the lower ones on account of the steepness of the hillside. A terrace also runs from this area round the

hillside to the north. There is probably another terrace between it and the upper one from area 9, but so dense is the growth of gorse on the hillside that the investigator decided not to explore that terrace.

A scarp 5 ft. in height advances us to area 8, about 13 yds. by 6 yds., a small level terrace excavated in the steep slope. A stone fire place marks the site of one of the old time huts.

Another steep scarp of 7 ft. brings us to area 9, a little terrace 6 yds. wide, with the remains of a parapet on its S. and E. edges about 2 ft. high. These parapets are apparently much abraded. N. and S. this little terrace is 8 yds. long, its northern limit being a sudden rise of 3 ft. which lands us on a fine terrace 18 ft. wide running round the hilside as shown on the plan. It rises about 3 ft. in the first 50 ft. a peculiarity noted in some of the other terraces.

A steep scarp of 12 ft. in height brings us to terrace 10, a somewhat dilapidated one 8 yds wide. It runs round the hill face to the north but soon narrows to 6 yds. The brow of this area is much abraded. The outer scarps of terraces 10, 11 and 12 show deep depressions (marked on plan) that look like entrance passages. Further examination of these terraces would be interesting work but would necessitate clearing away the furze growth. They were all residential areas on which formerly stood long rows of huts. Some of the stone fireplaces still extant show that the huts containing them must have stood near the inner scarp leaving the outer portion of the terrace open for passage and for defenders, in case of an attack.

Another scarp of 11 ft. brings the explorer up to area 11 which is 8 yds. wide at the south end and extends round the hill to the northern extremity of the summit area (marked 13 D) thence right round the western side of 13 area to the bluff head. It is from 16 ft to 33 ft. in width. Terrace 10 seems to run just below it for the greater part of the way, but the heavy growth of furze prevented a careful examination.

Terrace 12 has an 11 ft. scarp and its southern end is 8 yds. square. Proceeding northwards we descend a 2 ft. scarp and find a terrace with a down grade and diminishing in width until it joins terrace 11 as shown on the plan.

Above 12 rises a steep scarp 12 ft. in height and on the summit one reaches the *tihi* or highest part of the fort. This summit area, the citadel and final defence, is composed of various sub-areas, marked 13 to 13 D on the plan. The southern face of the summit is 24 yds. long; it is the brow line of a steep and high bluff. Sub-area 13 is divided into several levelled spaces as shown by dotted lines, the difference in levels being 1½ ft. to 2 ft. A descent of a 4 ft. to 6 ft. scarp brings us to 13 A and 13 B, the latter being 2 ft. higher than the former. The excavation is of curious form, presumably it depended on the contour of the original surface of the hill top. At the western end of 13 B is a sloping passage way up from 13 C, and another apparently on the eastern side from 13 A to 13. The 13 C area is about 17 yds. by 19 yds. in extent, a level surface except for a small extent 8 yds. by 6 yds. at the N.W. corner which is 2 ft. below the level of the rest. From this little sunk space there seems to have been an upward sloping passage from 13 D. Possibly the small rectangular excavation had something to do with the defence of the entrance passage. Along its eastern edge a low parapet runs to 13 A, below which is a 10 ft. scarp down to 12. The western scarp is about 12 ft.

Descending a 4 ft. scarp finds us on 13 D, the last sub-area of the summit, and which is about 16 yds. by 10 yds. in extent. On the north and east sides are seen remains, much abraded, of former parapets or ramparts. It is quite probable that such parapets existed on other scarp brows now broken down. There was possibly an entrance way at the N.E. corner. The scarp on the north side is 12 ft. in height but much abraded, and below it is a small demilune terrace which connects with terrace 11 sweeping round three sides of the summit stronghold. On the west side of the summit terrace 11 is from 16 ft. to 24 ft. wide, and even wider near its abrupt end at the brow of the bluff near 14. It is not a level terrace on this side but rises in sympathy with the summit area, not with an even slope, but in the form of shallow terraced formations. Its inner scarp is from 12 ft. to 18 ft. in height, increasing towards 14. About 20 ft. below this western extension of terrace 11 is an ill defined and much narrower terrace. Of this

upper part of the fort the N. and N.W. sides have suffered most from abrasion and erosion. Where excavated the sub-soil is shown to be a stiff clay. At the base of the high scarp near 14 are some signs of a former trench. When the fort was occupied the scarp in this vicinity was apparently not less than 20 ft. in height, a formidable barrier when surmounted by a stockade that would be probably 10 ft. in height.

This fortified hill area as described above was not connected with Taka-poruruku to the north. It was a self-contained defensive position in itself, but was connected with the two other forts on the same ridge to the westward. This connection was based on the widened end of terrace 11 near 14 and extended in the direction indicated by the mark → seen upon the plan. Naturally such a group of fortified positions was occupied by members of a single clan, in this case the Ngati-Pou division of the Ngapuhi tribe.

There must have been a great extent of stockade lines in the above fort, as each scarped face would be surmounted by a line, and the series of terraces would thus be a series of defensible positions.

When the Rev. S. Marsden visited this district in 1819 these forts were not occupied, though the stockades or portions of them were standing. It is not known as to whether they were occupied again after that time.

To continue the description of the three linked forts of Tapa-huarau it is necessary to commence at the terrace underlying the S.W. corner of No. 1 fort—

Tapa-huarau No. 2 Pa.

Proceeding along the ridge top from the high scarped face at the S.W. corner of No. 1 *Pa* we find the ridge of the saddle a very narrow one, with a gradual slope on the north side and a steep fall on the south side. At a distance of 21 yds. along the straight ridge is a shallow fosse with the remains of a parapet on its eastern side. See A in Fig. **67**, p. 188. At its south end this ditch is continued a few yards down the hillside. Three yards below the level of the narrow ridge top, on the north slope, is a terrace, here 4 yds. wide, but widening out as it proceeds to 20 ft. On this terrace at B is a store pit 20 ft. long. The straight ridge top from A to C is but 3 ft. wide across the top. This peculiarity may be partially artificial. This aspect continues for 50 yards.

At C we find a fosse cut across the ridge top, it being 6 ft. wide, 6 ft. deep on the south side but shallow on the north side. In its centre is a causeway 5 ft. wide, original formation unexcavated. Then comes a small levelled area. That part in which D is situated is surrounded by the remains of a parapet on the south, north and east sides, except where a fosse 10 ft. wide extends from the middle of the area along the scarp base and 20 ft. down the southern slope.

A steep scarp of 16 ft. in height lifts us to the elevated area E, the summit of the fort, which area is 28 yds. long. At its eastern end are seen levelled hut sites, but this area is not a level one; its western part is 5 ft. higher than the eastern. Underlying terraces are noted on both flanks; that on the north side, covered with a dense growth of furze, has an inner scarp of 20 ft. Smaller ones, much overgrown, are seen below it.

F area is 6ft. lower than E, the drop being a steep scarp; it is, however, a part of the true summit area or stronghold. It is 14 yds. long and averages about 16 yds. in width. At its eastern end are the remains of a parapet now 2 ft. high. The north and south faces of E and F have been steeply scarped.

Proceeding westward we descend a steep scarp of 12 ft., at the base of which is a fosse now almost filled with debris. At the southern end of this fosse is a singular excavated area or wide fosse now 3 ft. deep and about 14 yds. long, extending down the hillside, apparently a form of flank defence. See G on plan p. 188. On the northern side of this lower area is a flat excavated area 13 yds. by 10 yds. in size, 5 ft. below the level of the surrounding ground and extending to within 10 ft. of the base of the scarp. This sunken area was probably connected with the terrace on the northern side, and is marked H on the plan. Areas E and F represent

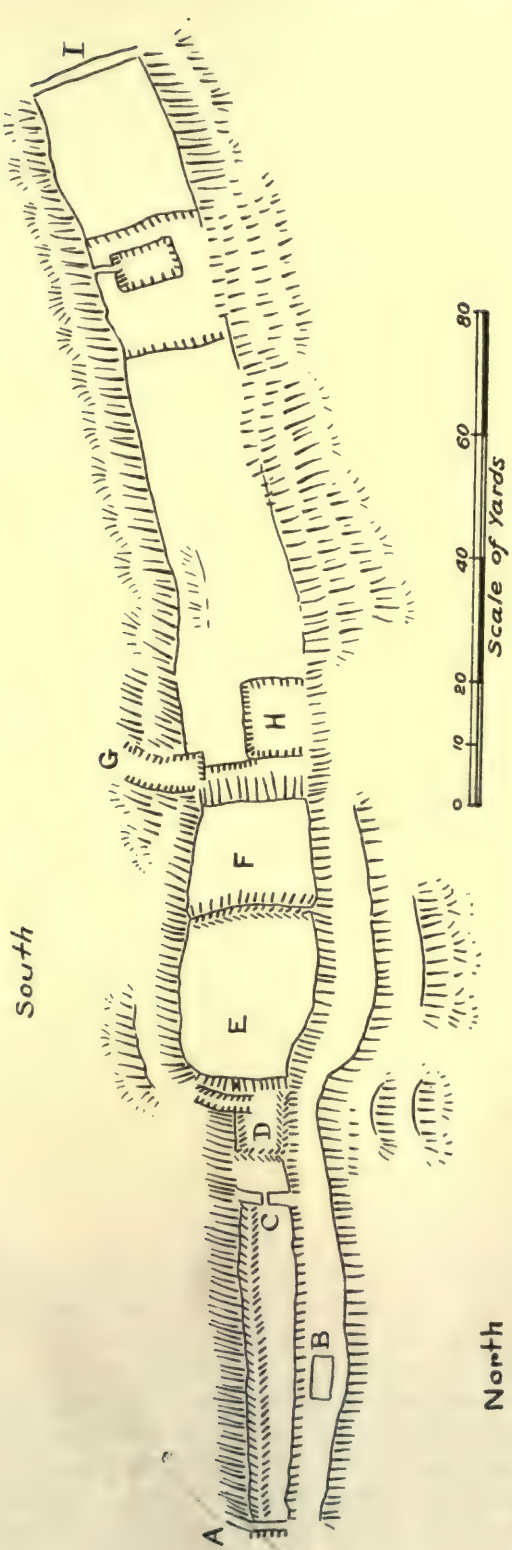


FIG. 67.—TAPA-HUARAU No. 2 PA, TAIAMAI DISTRICT, NORTH AUCKLAND.

[*Miss E. Richardson.*

See p. 187.

the high lying stronghold of this No. 2 *Pa*, the western limit of which is the 12 ft. scarp above mentioned.

Proceeding westward from the above works along the ridge top we find it to consist of a saddle, with a fall of 10 ft. in 55 yds. Here are seen no defences though it may have been a residential area, from which the people would retire within the defended areas in the event of an attack.

At 55 yds. from H area we find the lowest part of the saddle formation has been excavated 2 ft. to 3 ft. and so flattened into an area of 20 yds. by 19 yds. Within this area is situated a large store pit 30 ft. long and 5 ft. deep. This pit was apparently kept dry by a ditch to the southern slope, as shown on plan. From here the ridge top rises for 25 yds. to the trench marked I, which is the first defence of Pa No. 3 of this series and is marked as A on the plan thereof.

Tapa-huarau No. 3 Pa.

We have already mentioned the trench cut across the ridge at the eastern end of No. 3 Pa. See A on Fig. **68**, p. 190. This trench or fosse is 6 ft. deep at its northern end but almost filled with debris at its southern end. From this south end a terrace 10 ft. wide runs for 20 yds. round the southern side of the elevated area E; its inner scarp being 12 ft. high and now presenting a 1 in 1 batter. From A fosse we ascend a 13 ft. scarp still holding a 3½ in 3 slope to find that its upper part is the face of a parapet still 3 ft. to 6 ft. high. This parapet has been so formed in order to heighten the eastern scarp of the E B area and so render it the more formidable. Ere abrasion had lowered the parapet and filled the fosse this scarp was certainly much more nearly vertical and probably not less than 17 ft. in height.

Area E is 9 yds. by 8 yds. in extent and carefully levelled, with parapets on its eastern and southern faces. On its western side is a 2 ft. trench at the base of the eastern scarp of area F.

Area B is also level and 3 ft. lower than E; it is 10 yds. by 8 yds. It carries the eastern parapet, 4 ft high here, an 11 ft. scarp on the western side, and on the north a 6 ft. scarp down to terrace D, here 7 yds. wide. The eastern end of D shows a parapet 6 ft. high. About five yards below the level of D terrace is another wide one which apparently commences at the saddle east of A. Where the growth of gorse and fern is so prolific as hereabouts terraces are often obscured from view. Terrace D continues right along the northern slope of the ridge, below terrace C, to the end of the fort, but varying in width and also changing its level. In these fortified ridges the flank terraces often rise and fall in sympathy with the contour of the ridge top. Terraces C and D show inner scarps of 16 ft. in height, no mean defence in itself in pre-European days.

From area E an ascent of a scarp 9 ft. high lands the observer on area F. On its northern side, 5 ft. below the level of F commences terrace C which shows a small parapet 2½ ft. high on its outer edge for the first eleven yards, beyond which the terrace rises somewhat. The south and east rims of F area also show signs of former parapets, now much abraded.

Twelve feet below the south side of F area commences a terrace that runs round the steep hillside for some distance. See L on plan, p. 190. That terrace is the uppermost of a fine series of eight or nine similar ones that extend down the hillside to the flat far below. This fine array of carefully excavated terraces is most striking and must have presented a picturesque appearance when occupied by huts and stockades. They were not measured, however, and hence are not shown on the plan.

The ascent of a 5 ft. scarp west of F brings us up to area G, another levelled expanse 12 yds. long, on the western side of which is a fosse, 10 ft. wide and 4 ft. deep, at the base of the eastern scarp of H area. This scarp is 12 ft. in height and considerably abraded, exposed as it has been to every storm for about four generations without any care from a resident folk.

The areas marked H, I, J, and K represent the highest part of the fort, their different levels resulting from the originally longitudinally rounded form of the ridge top, the whole having been excavated into flat level areas at the least expenditure of labour. The scarp on the northern side

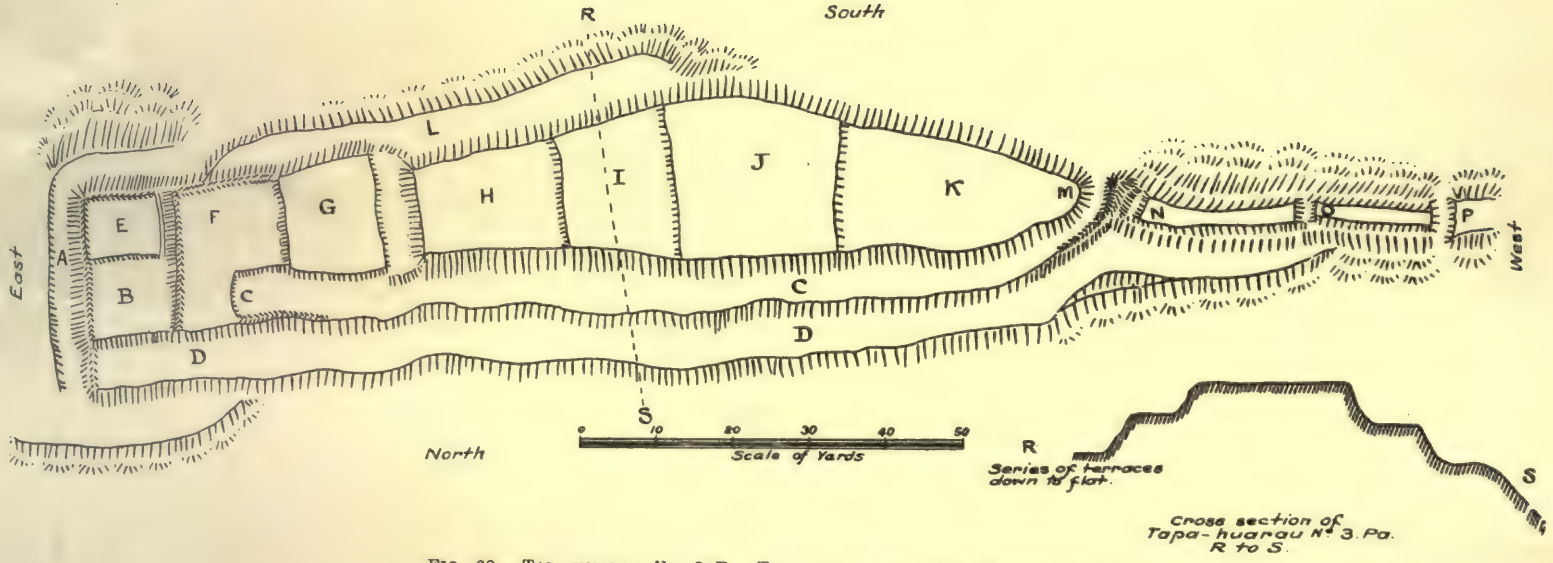


FIG. 68.—TAPA-HUARAU NO 3 PA, TAIAMAI DISTRICT, NORTH AUCKLAND.
See p. 189.

[Miss E. Richardson.

of these uppermost areas is from 16 ft. to 20 ft. in height, and C terrace at its base is still 16 ft. wide though doubtless broken away as to its outer parts. The fine series of terraces below has been marred by a landslip. For some 60 yds. at its western end the southern face is remarkably steep and shows no terraces. Area J is the apex of the fort, and here are seen some *takuahi* or stone fireplaces. The differences in level of these summit areas average about 2 ft. at each break.

At M is a steep scarp of 18 ft. with a fosse at its base that was probably 8 ft. wide at the bottom originally. This fosse opens on to C terrace, which carries a parapet on 8 yds. of its brow here. Outside the fosse, between it and N, is an earthen wall with an inner scarp of 6 ft., and outer scarp of 12 ft. to 16 ft., with a trench at its base. Then come 21 yds. of a narrow ridge descending to a low saddle, then a 6 ft. drop scarp with a trench at O, then 16 yds. of razor back ridge to a deep fosse at P, of which the outer scarp to the west was originally about 12 ft. high. This is the lowest part of the saddle which, from this part carries a gentle upward slope for 20 yds. to merge into a very steep rise to the main ridge to the west. At the base of that steep rise a deep pit or fosse has been excavated part of the way across the saddle ridge, though its use as a defensive work is extremely doubtful. On the top of the western ridge, about 300 yds. from No. 3 *pa,* is a singular work consisting of an area 30 yds. by 9 yds. defended by a scarp with a trench at its base. Presumably this was an outpost of No. 3 *pa,* probably utilised as a post of observation from which any force advancing on Tapa-huarau could be observed. It also overlooks the old fort named Nga Puke-pango, situated on a ridge further west, or south west. On the side hill near the above post is a terrace 20 ft. long and 10 ft. wide carefully excavated, which leads one to wonder if the old time folk had begun to form another complete *pa* on this hill top. If so its interest lies in the proof that the work of excavating, scarping and terracing was commenced at the top of the hill. In ridge forts, where built up ramparts are a minor item, and much excavating of terraces was done, the disposal of spoil material would necessitate careful forethought.

We have seen that the three Tapa-huarau forts were connected by residential areas, that the series may be viewed almost as one fortified place possessing three stronghold centres. From this ridge Pouerua cone lies S.E. by E. and Maunga-tu-roto about due S. while Te Rua-hoanga is a little north of E. Another hill *pa*, name unknown, lies N.E. by N. about a mile distant, indeed there are three others in that vicinity, none of which were explored. Local residents speak of an old hill fort about six miles from Ohaeawai wherefrom a trench extends from the defences down to a swamp known as Wai-whariki. Possibly this was a protected way giving access to the water supply.

The three peaks of Tapa-huarau are of about the same height, with saddles between, that west of No. 3 being the lowest. The series of terraces on the southern slope of No. 3 possesses an element of interest in the fact that communication passages can still be discerned, showing the zigzag course taken by all ascending the series, an important factor when the place had to be defended against a resolute enemy, for it meant numerous flank attacks.

When the Rev. Samuel Marsden visited the Taiamai district in 1819 it seems to have had but few inhabitants, some of the fortified places being quite deserted. Thus we read in his Journal:—"There were evident traces of a large population. We passed near the ruins of two villages on the edge of this plain. They are now wholly uninhabited. A few potatoes I observed growing upon the sides of the hills on which they stood. They had been strongly fortified at no very distant period. The chief informed us that they belonged to him and his friends and at one time contained one thousand inhabitants each, but the inhabitants had been besieged and were compelled at length to yield to the enemy and to quit their strongholds. The hills are very high upon which the villages stood, and so strong by nature that they could not easily be taken unless the inhabitants were starved out."

As the writer does not give the names of the deserted fortified villages seen by him at Taiamai in 1819, we cannot be sure that the Tapa-huarau forts were the ones alluded to, though

that seems to be the opinion of some local residents at the present time. It is, however, apparent that the district had at that time been partially depopulated.

On the margins of the creek at the base of Tapa-huarau, south side, it was interesting to see the *taro* (*Colocasia antiquorum*) growing wild, as also in the very stream itself. Some of these so growing in the water were fine plants nearly 4 ft. high, with leaves 2 ft. long.

The late Archdeacon Walsh stated that Te Rua-hoanga was said to have been built by the chief Te Morenga and to have been the last of the old type of fort built in the Taiamai district.

In Fig. **69** we have the longitudinal section of a small and somewhat insignificant ridge *pa* at Whangarei. It illustrates a very common type of little interest found in many districts. A knoll on a narrow side spur has been scarped for defence and levelled in three small areas for hut sites. One side of the spur has a steep fall, the slope of the other side is more gradual. Like many other such places constructed on ridge spurs this *pa* could not be held against fire-arms. The single scarp is from 9 ft. to 14 ft. high, and is the only line of defence.

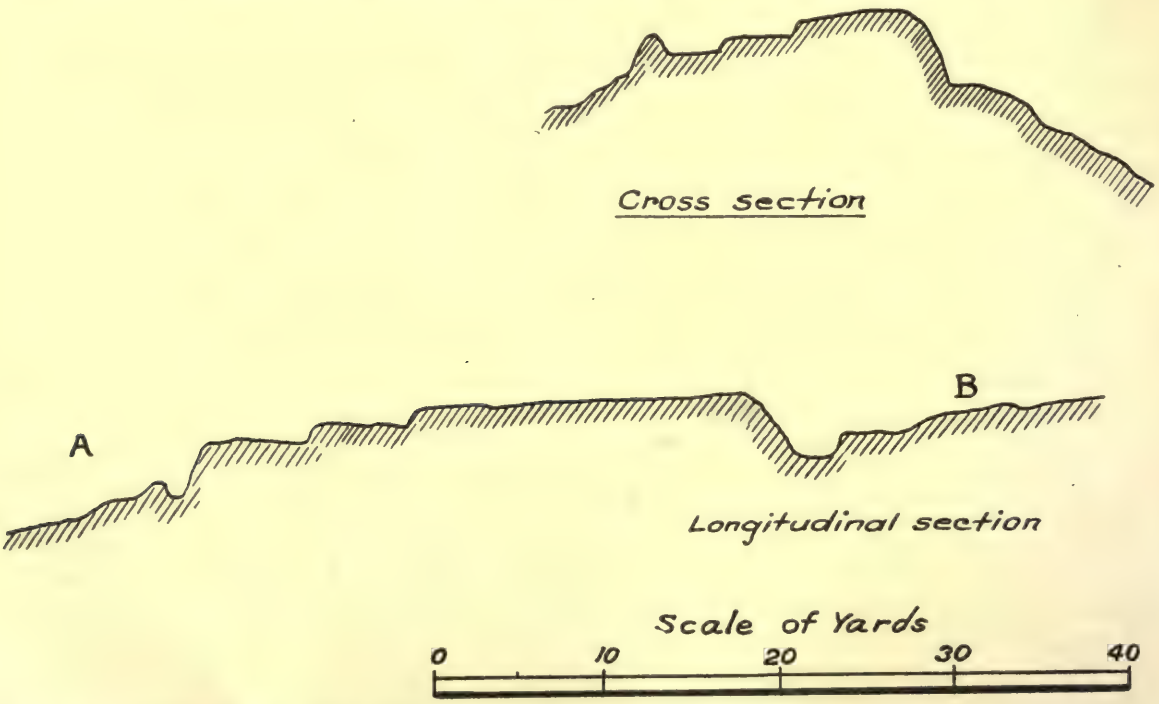


Fig. 69.—Longitudinal and Cross Sections of a Small Fortified Position at Whangarei, North Auckland.

[*Miss E. Richardson.*

There are a number of old pre-European forts about Whangarei, some of which can be seen as one proceeds to Onerahi by train, and down the harbour by boat, including some picturesque terraced hill forts.

Oneone-nui Pa.

This old fort is situated on a forest covered ridge near Muriwai Beach, about a mile north of the former accommodation house, and about five miles from the Wai-mauku station on the Auckland-Kaipara railway. This part of the west coast of the northern peninsula has been a favoured place of residence of the natives, and many interesting middens, village sites and old forts are here to be seen. About Muriwai, however, the beach sand has been drifting inland in late times, though obviously this cannot have been the case to any great extent in pre-European days. Enormous deposits of wind blown sand cover the more level land and have, in some places, reached the hill tops where, with a front 50 ft. to 60 ft. high in one place, it slowly

rolls forwards burying the forest as it advances. It has also buried many tokens of old time Maori occupation, such as those on the wooded ridge south of the Muriwai stream, and is filling the Okaihau lake. The drift has left the Oneone-iti hillock near the beach partially uncovered and has ascended the ridge north of the Muriwai stream half way to its summit. Here it steadily advances, swallowing the forest as it does so, and, unless checked, it will probably cover the interesting earthworks of Oneone-nui *pa*.

Signs of former occupation are seen on the hills above the beach at Motu-tara, about two miles south of the Muriwai stream, and between the two places are some fine middens, now surrounded by a waste of sand. These middens offer no mean field for exploration, and some interesting relics of old Maori life have here been found.

The Oneone-nui *pa* is situated on the western extremity of a long ridge that approaches the coast at right angles, throwing off a flank spur on the southern side that falls to the Muriwai creek. The upper part of this flank spur, as also much of the crest of the main ridge east of the A defence, formed residential areas in former times, though not fortified by earthworks. These places may, however, have been protected by stockades.

No detail plan was made of works on the southern flank spur inasmuch as this area forms no part of the fortified village or *pa* proper. These outside areas were residential suburbs, the people of which would retire to the fort in the case of a serious attack. This flank spur accommodated a considerable number of people whose huts were built on terraces along the slopes and across the crest of the spur. There are also a number of store pits of the semi-subterranean type (*rua tahuhu*). No fosses or parapets are seen on this spur, both slopes of which are easy of ascent. Advancing up the crest of the spur one finds the lowermost terrace thereon to be 14 yds across, above which are two more, 6 yds and 7 yds. wide. Above these are four store pits excavated across the spur, the smallest thereof being 10 ft. by 4 ft. in size, and the largest 17 ft. by 6 ft. They contain much debris, the whole spur, as also the main ridge, being covered with a dense growth of forest consisting of *Metrosideros, rewarewa, mapau, mahoe, kohe, karaka, kawakawa, nikau, Cordyline* and *wharangi,* some of the last mentioned being of unusual height. Some of the *Metrosideros* are of large size, though apparently all have grown since the place was abandoned. The rate of growth of the *pohutukawa* is unknown to the writer, but with regard to the other trees none were seen on the areas formerly occupied by natives that could not attain their present size in a period of 80 years.

Proceeding further we encounter two more terraces, one of which is continued along the side of the spur. There are also several longitudinal terraces on the outer slope of the spur. We also encounter rectangular store pits excavated in soft sandstone. One of these is 18 ft. by 8ft. in size, another 18 ft. by 10 ft. and now 4 ft. deep, but containing much debris. At one corner of this pit a *Metrosideros* (*pohutukawa*) has taken root on the brink and grown half in the pit and half outside, sending a root 18 to 24 inches in diameter along the upper part of the inside of the pit. This tree has grown in three parts or divisions, collectively about 6 ft. in diameter. It has died, fallen, and is half decayed. Some of these pits are well preserved, the sandstone walls being vertical.

We have now reached the level part of the spur crest, which is on the level of the main ridge, and here we find a huge store pit 28 ft. long, 19 ft. wide and 10 ft. deep, excavated in soft sandstone. The walls are vertical and the pit contains 2 ft. to 3 ft. of debris, some of which was removed, so that the original depth of the pit was ascertained. When in use these pits were roofed over with a A shaped roof which, in many cases, was covered with earth.

On the vertical walls of this pit are seen rude carvings in the soft sandstone formation. These represent grotesque human figures, one wearing a *heitiki* pendant. Another representing a *heitiki* is also seen. The work is obviously Maori and has apparently been the work of idle moments, possibly long since the place was abandoned. The pit is an unusually deep one and would contain a great quantity of sweet potatoes, for the preservation of which they were used. It lies N.E. and S.W. At the former end a *pohutukawa* tree has taken root at the edge of the

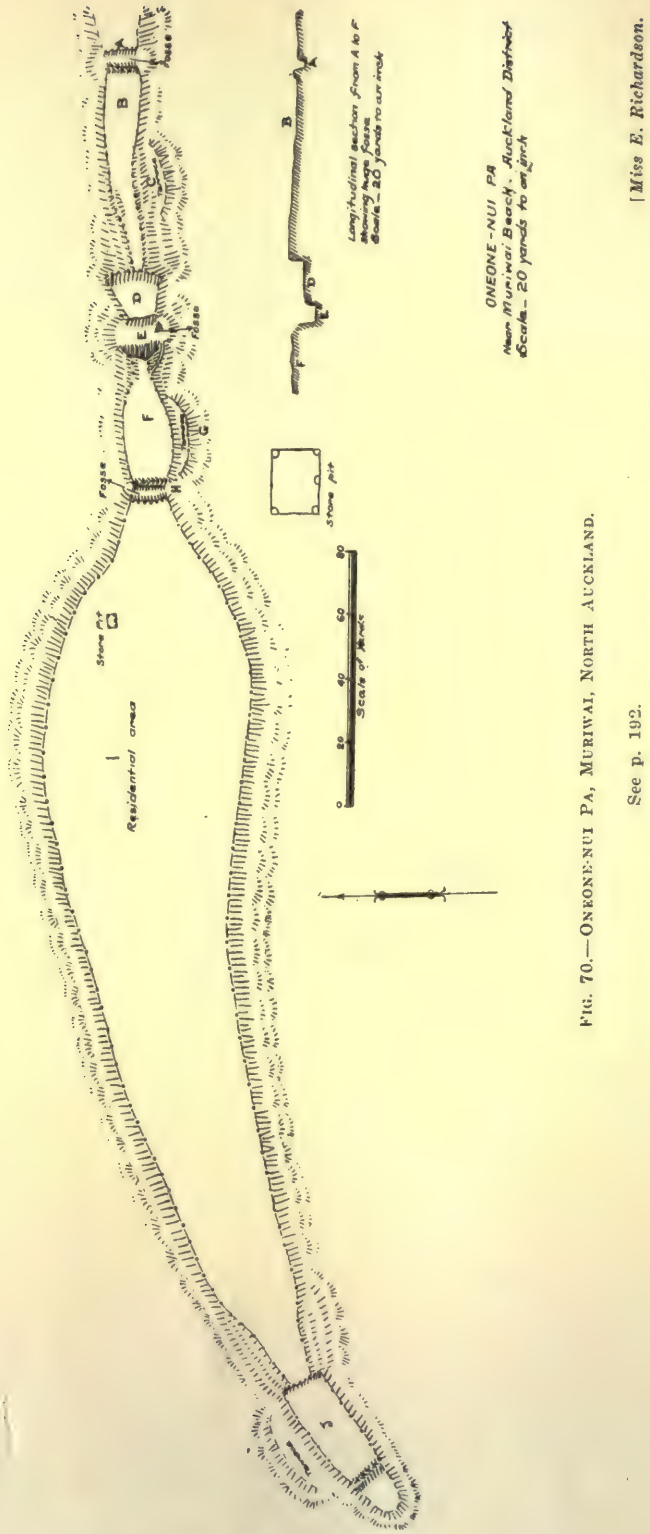


FIG. 70.—ONEONE-NUI PA, MURIWAI, NORTH AUCKLAND.

See p. 192.

[Miss E. Richardson.

pit, as in the other pit above mentioned. It has sent roots down into the pit in order to support itself, which roots have grown into a solid mass eight feet across on the face of the pit wall. The tree has practically no trunk, its many branches or divisions separating at, or a little above, the ground line, where the diameter is about 7 ft.

Near the above pit is an excavated and carefully levelled area 20 yds. by 16 yds. in size. Semi-subterranean rectangular store pits are fairly numerous on this area, but the *rua kopiha* or wholly subterranean type is here lacking, to be found further on when we enter the fortified area. Where the spur joins the main ridge is a flat area of considerable extent that was probably occupied.

In order to review the whole of the occupied area we must now commence explorations on the main ridge, east of the fortified area. About 150 yds. east of A in Fig. **70**, p. 194, is the outermost sign of occupation to the eastward, and on this widened part of the ridge top we find a trench 14 yds. long and 4 ft. deep, with an inner scarp up to 8 ft. in height, that was carried half way across the ridge top. It is not connected with the true *pa*. Whether this defence was continued by a stockade, or was simply unfinished, it is difficult to say. The ridge top here is nearly level and shows some store pits. Proceeding westward along the ridge for 65 yds. we note that the width has narrowed to 7 yds. We then descend 30 yds. to a narrow saddle, seeing no signs of occupation, after which we rise to a level area, the junction of spur and ridge. Continuing along the main ridge towards A for 58 yds. we find its width reduced to 9 yds., and here we encounter the outermost defence of the true *pa* of Oneone-nui. A fosse has been excavated at A across the ridge top 28 ft. long and 6 ft. wide at the bottom, counter scarp up to 6 ft., inner scarp 8 ft. high, but now much abraded. The increased height of the inner scarp is produced by a parapet formed on the western brow of the fosse. The northern slope of the ridge has a steep fall of 12 ft to 20 ft. below which is an easier slope. The south side shows a gradual slope. The dotted lines show the lines of stockades as they probably existed.

FIG. 70a.—STORE PITS EXCAVATED WITHIN DEFENSIVE TRENCHES.

[*L. G. Kelly.*

In Fig. **70**a above appear two illustrations showing store pits excavated within defensive trenches. These were supplied by Mr. L. G. Kelly of Auckland, who states that these sketches were made at the Korekore *pa*, which is by some termed the Muriwai *pa*, but is known to us as the Oneone-nui *pa*. He refers to the designs found carved on the walls of old rectangular store pits at that place, illustrations of which appear in Mr. Firth's paper on the Korekore *pa* published in vol. 34 of the *Journal of the Polynesian Society*, pp. 1 to 18.

The first 20 yds. of B area contain five semi-subterranean store pits of rectangular form, after which the ridge narrows to a razor back with a very steep cliff on its northern side. C denotes a small terrace on the southern slope, on which are two store pits. A little further on is the most interesting feature of the *pa*, a huge fosse 60 ft. wide that has been carried right through the ridge. The greater part of the excavation has been in soft sandstone, and the work must have been excessively tedious with primitive tools of wood and stone. The walls of the fosse are vertical, and, as the sectional view shows, the fosse shows two floor levels. The eastern scarp of this huge trench is 14 ft. high at its highest part, and 10 ft. at its northern end. At the base of this vertical wall commences a levelled area (marked D on plan) that extends 38 ft. to the westward and is 40 ft. wide at its east end, but less at its western end. Its north-

ern side has been steeply scarped 16 ft. to 18 ft. down, indeed it was probably vertical originally. At the western extremity of this D area yawns the deeper part of the great excavation in the form of a fosse 28 ft. long S. and N., 17 ft. wide at the bottom and 11 ft. deep (marked E). The western scarp of this fosse is over 20 ft. in height and almost vertical, its summit being the original razor backed ridge. Both the northern and southern sides of the ridge have apparently been steeply escarped, though now showing much abrasion. At the southern end of the deep fosse E a path seems to have led up to F area. It is not clear why this excavation of D and E should have been made so unusually large, as there is no fosse defence of corresponding dimensions elsewhere to enclose a given area. Both A and H denote defences of normal dimensions, though F area was possessed of somewhat stronger defences than B area. Area I, of vastly superior size, and where the great bulk of the people must have resided, though possessing strong flank defences in natural cliffs, had only stockade defences at its western extremity, where the ridge descends towards the sea coast. Areas B and F were evidently meant to be the strongest and central areas, inasmuch as the parapets at fosses A and H are on the inner sides of such excavations. As the ridge brows east of D and west of E are at about the same level, it is possible that D area was excavated in order that an enemy force entering B area should possess no point of vantage from which to operate against F area. Naturally any defences on the level of the defended area were made stronger than those on a brow or slope. An attacking force advancing along the level ridge summit to A would be on the same level as the defenders, but if attacking from north, south or west at any part it would be compelled to advance up a steep slope or precipitous scarp and be at great disadvantage. Any place along the flanks that was scalable would certainly be blocked by a stockade.

As observed, the summit of the western scarp of E fosse is the razor backed ridge which, however, soon widens out to a residential area (see F on plan). Here hut sites and pit stores (*rua kopiha*) are seen, the latter excavated in the soft sandstone. The northern side shows a perpendicular cliff 20 ft. and upwards in height, and there is a steep 12 ft. to 15 ft. drop on the south side, above which scarp is the small terrace G. Area F is but 39 yds. in length. Its western extremity is marked by the defences at H. Here we find a fosse 30 ft. long, its eastern scarp surmounted by a parapet now but 2 ft. to 4 ft. high. The fosse is 7 ft. to 10 ft. wide at the bottom, but contains much debris, eastern scarp up to 12 ft. in height, but most of it much less, the northern end of the fosse being much filled up. The western scarp, possessing no parapet, is lower.

At the southern end of this fosse, where it widens out and the scarps are 8 ft. to 12 ft. high, are some interesting store pits excavated under the scarps, the entrances thereto being holes at the base of the scarp. These are situated on both sides of the fosse. These store pits are oblate or dome shaped, like those of the Taranaki coast, and have been excavated in the soft sandstone that underlies the soil all along this ridge. One of these pits is ovoid in form, being 9½ ft. long and 6 ft. wide. Across the middle is a low wall of the original sandstone 8 in. high. The dome shaped roof is 5 ft. above this partition. The entrance hole at the base of the scarp is at the side of these pits. The above pit is connected with another one close to it through a 10 in. wall. The connecting hole in this wall is but 10 in. wide; the second pit is circular in form and is connected with a third one. Why two pits are connected by a hole too small for a person to pass through is not clear, unless it was used in connection with the sorting of the tubers when being stored, for these pits were used as storage places for the *kumara*. In another place two pits are connected by a hole of larger size through which a person might pass. See Fig. **70**a, p. 195.

These pits much resemble those seen at the Ihupuku *pa* at Wai-totara, the Okoki *pa* at Urenui and other places on the Taranaki coast. Similar pits were also seen by Mr. Hamilton at a *pa* on the Napier-Taupo road and, in this latter case, some of the pits contained coffins, having been used as burial places in late years. The pits of Oneone-nui, just described, may be called *rua poka*, or cave stores.

Area I has been a fine residential area commanding a grand view of the ocean, though now covered with tall forest trees. It is in places upwards of 60 yds. wide. The first 44 yds. is level and here it is 55 yds. wide, having a cliff 30 ft. to 50 ft. high on its northern side, and to the south a very steep scarp of 15 ft. to 20 ft.

Towards the northern edge of this area are two storage pits of a very unusual type, in fact the only ones of the form ever seen by the writer. They are storage places showing a combination of the *rua tahuhu* and *rua kopiha* forms of pits, that is to say of the subterranean and semi-subterranean types. One of these shows a rectangular open pit 20 ft. long, 14 ft. wide and 3 ft. deep, but deeper originally. Within this pit a *rua kopiha,* well like pit, has been excavated at each of the four corners, also another in the middle of one side of the pit. See diagram on plan p. 194. These subterranean pits must thus have been entered from the interior of the semi-subterranean rectangular store house which was covered with a A roof. This is a novel arrangement of store pits within a store pit; it may possibly have been instituted for the saving of space in a congested area. It reminds us of the store pits within cooking sheds seen by Dr. Marshall on the Taranaki coast. Four feet from this pit is the edge of another that is 15 ft. long and 7 ft. wide, in three corners of which are similar subterranean storage pits.

Proceeding along this fine I area we note that the ground rises gently for 62 yds. and find many levelled hut sites, also store pits and terraces on the southern slope. Here is a *Metrosideros* 6 ft. in diameter, and a *Cordyline australis* 33 in. in diameter at 3 ft. above the ground line. The former was probably here when the *pa* was occupied. Another 36 yds. finds us on a fine level area 45 yds. wide, with a gentle slope to the southern break of the ridge and the precipitous cliff on the north side. From that cliff head one looks northward over miles of ruined lands, covered with drear ever-moving sand dunes freed for drift by the stock and fires of an intrusive race.

Both forms of store pits are seen in this area. At one place on the gentle southern slope are twelve of the well like subterranean pits in a row. One rectangular semi-subterranean pit is 28 ft. long and 11 ft. wide, on the edges of which, and growing half in it, are two fine trees (*Metrosideros*) 3 ft. and 4 ft. in diameter.

Advancing another 65 yds. along the ridge, we find that the summit area has narrowed to 35 yds., cliff on north side, gradual slope for some distance to the south. At 50 yds. further the flat top narrows to about 10 yds., then becomes a rounded ridge and descends to the S.W. by S. Sixteen yards down is a little terrace on the narrow spur 35 yds. long by 12 yds. wide, while on the N.W. slope is a terrace 20 ft. wide some 6 ft. lower. At the south end of the upper terrace (J) is a scarp of 3 ft. with a small parapet thereon. Then comes another small terrace 12 yds. long. This is the last sign of occupation at the western end of the ridge, and the spur now drops steeply down to the sand dunes far below. Thus we see that the defences at this end must have consisted of stockades, as opposed to the heavy earthwork defences of the eastern part of the fort.

The fortifying of Oneone-nui was much facilitated by the precipitous flanking cliffs. The south side of the ridge was probably stockaded along the brow of the low bluffs but a good deal of the high cliff on the north side was unscalable.

Some of the flank scarps are probably artificial, but abrasion, the collection of debris, and vegetation render this uncertain. To look at this forest-covered ridge from a distance no observer could imagine that it had ever been occupied by man. But when traversing the densely forested area one comes upon the terraces, fosses, scarps and pits of the Maori folk in the shady depths of the woods, remains of the folk of former centuries who have passed away and left no signs but these. Here the descendants of the old ocean wanderers lived and died, fought and toiled, all ignorant of the great world and of other races than their own.

On the low land near the coast, about 60 chains from Oneone-nui is a small hill known as Oneone-iti that shows signs of former native occupation, and on the right bank of the Muriwai stream at the southern base of Oneone-nui ridge is the midden of another old Maori settlement.

In writing of the Great Barrier Island Colonel Boscawen remarks:—"At Whakaparapara there is a very old *pa* and the ditch is very deep and well cut, with very old *pohutukawa* trees growing on the side. Another thing is the palisading made of white *manuka* appears to have grown in places."

KAI-TANGATA.

The Kai-tangata *pa* is situated on a ridge running out into a swamp near Urenui, northern Taranaki. I am indebted to Mr. G. L. Stephens for a plan of its defences and particulars as to area. See Fig. **71** below.

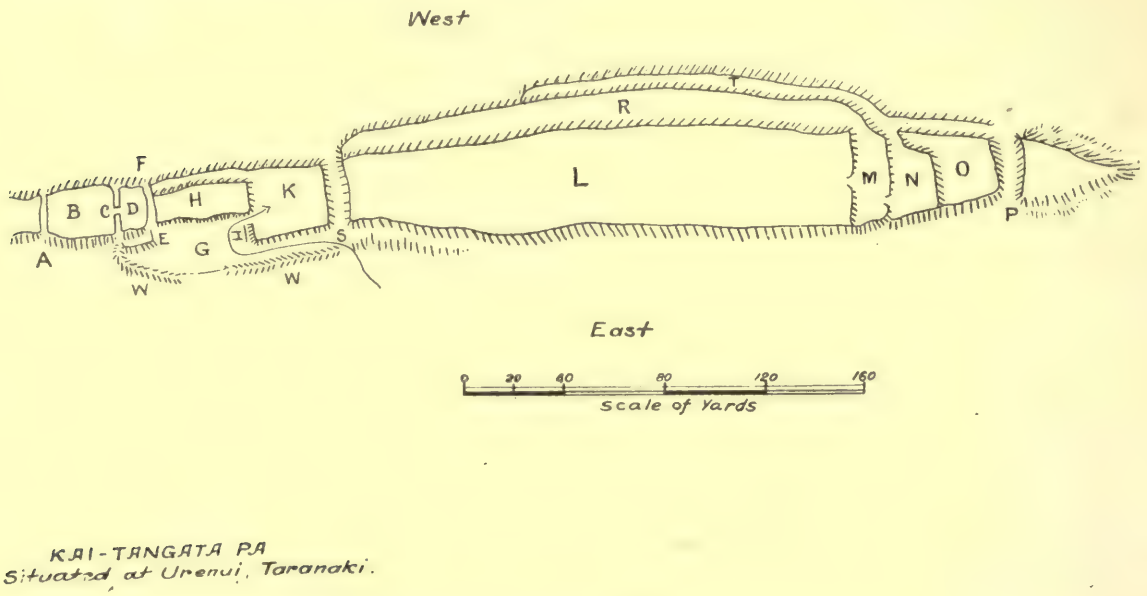


FIG. 71.—THE KAI-TANGATA PA, NEAR URENUI, TARANAKI.

[*Sketched and measured by Mr. G. L. Stephens.*

A marks a fosse dividing the fortified area from the mainland; it is 14 yds. long, 10 ft. wide and 10 ft. deep. B area is 27 yds. by 18 yds. in size. The sides of the various areas have been scarped for defensive purposes, which scarps would be surmounted by stockades.

C marks another fosse 18 yds. long and 10 ft. deep, excavated in two parts, a block having been left in the middle to give access to D area, which is but 10 yds. by 15 yds. E marks a little terrace on the eastern side of D area and 6 ft. below it, while G is another and lower terrace, along the outer edge of which a parapet is seen at W.W.

H area is 37 yds. by 10 yds. and lies 10 ft. above K; its southern end being protected by the deep fosse at F. K area is 27 yds. long and a terrace extends from it round the western slope of H area. From terrace G the access to K area is clear, being a gradual slope upwards to K. The short scarp of K near I has not been deemed deep enough, hence at its base a trench 6 ft. wide has been excavated. The curved line shows the former entrance from the eastern side by way of S to G, then up to area K.

At S is a deep fosse 15 ft. wide, with a scarp of over 20 ft. on its northern side, at the top of which lies the fine area L, 200 yds. long and about 37 yds. in width. The eastern side of L has been scarped, below which the slope is a steep one. The western side has a more gradual slope, and here two terraces have been formed. The upper one, R, ten feet below L, averages about 12 yds. in width; while the lower one, T, shows much abrasion; apparently it has been about 10 ft. wide.

M area is but 12 yds. in length, *i.e.*, north and south, but is 29 yds. wide; it is connected with terrace R. The ascending approach to the summit area L was as shown; the access to N area is likewise marked.

N area is connected with terrace T, which connects with the terrace on the western slope of O area. The outermost fosse at P cuts off the end of the ridge and is 25 ft. deep, the bottom being now 8 ft. wide.

Tunu-haere Pa, Whanganui.

The Tunu-haere *pa*, situated on the right bank of the Whanga-nui river, opposite the native hamlet of Kai-whaiki, is a good example of a fortified village as constructed on a narrow topped and sloping ridge spur. The upper limit of the fortified part is, as often occurs, at a point where there is a dip or saddle in the spur, or ridge, which hollow much assisted the task of the men of old who constructed the defences. At this dip the summit of the ridge has been cut down so as to present a steep wall, which defence was certainly supplemented by a strong stockade. A similar defence exists at the lower end of the fortified part, where a deep transverse ditch has been cut across the ridge, and this was stockaded in a similar manner. Such lines of stockades have been continued round the sides of the spur, at a little distance down hill from the top, and supplemented with scarps at divers places, in order to enclose the village. Sites for houses have been made by forming terraces and levelling the sloping summit of the ridge in small areas. Other lines of stockades and escarpments formed secondary internal lines of defence. At one part of the ridge summit a narrow passage of approach was formed at a spot where a secondary line of defence was entered in ascending the spur. The sides of the ridge have been cut away on both sides so as to leave a narrow wall of earth, some four feet in width, and ten feet in height, as an approach to the upper defences. Such a narrow approach could be easily defended.

A picture of this *pa* in Power's *Sketches in New Zealand* is most misleading, and gives an absolutely erroneous impression of the spur on which the *pa* is situated. This place was abandoned in the latter 'forties' of last century, the people thereof settling at Kaiwhaiki. Sir G. Grey is said to have visited Tunu-haere *pa* in the 'forties.' Since its abandonment it has been used as a burial ground.

Nga Potiki-a-Rehua Pa, at Wai-totara.

The old pre-European *pa* at Wai-totara known as Nga Potiki-a-Rehua is a very interesting example of an old Maori fort, inasmuch as it shows, at its western end, a series of fine terraces, while the middle, as also the eastern end, illustrate how a ridge top was fortified by means of fosse, rampart, scarp and stockade. The plan given in illustration of this fort (Fig. **72**, p. 200) shows the details as well as they can be depicted on paper, but nothing is so satisfactory as a personal inspection of such places, and I have spent many pleasant days in exploring such places, wandering over the terraces and ridges once teeming with human life, now long deserted and overgrown with grass, fern, scrub or bush.

This interesting old fort is situated close to the village of Wai-totara, north of Whanga-nui, on the west coast of the North Island; it includes the upper part of a narrow spur, the abrupt western end of which impinges upon the left bank of the Wai-totara river, a hundred yards north of the bridge. The summit of this ridge spur at the western end is about 200 ft. above the level of the river, from which point, as will be seen by referring to the plan, it falls away towards the east, to rise again to its point of connection with the plateau to the eastward.

The surrounding country is of an interesting nature, inasmuch as it appears to be an old ocean bed that has been raised high above sea level in recent geological time, and in which innumerable valleys, ravines and gulches have been formed by the action of water. Some of the intervening plateau are of considerable extent, showing level or gently sloping surfaces bounded by deep, steep sided gullies; while in other places only narrow ridges are seen between such ravines. The Potiki-a-Rehua is one of these narrow spurs, widening at its western end, with a

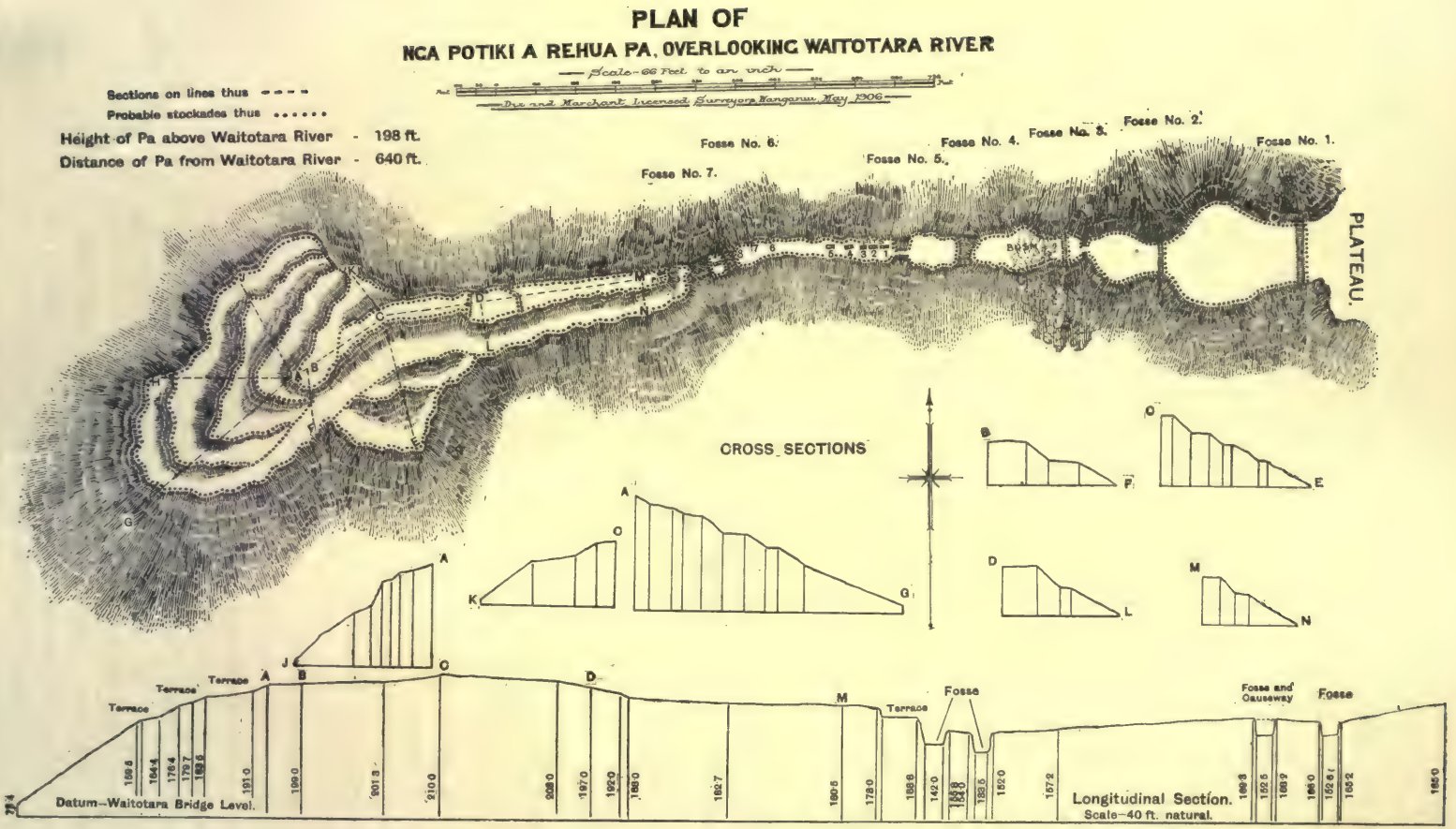


FIG. 72.—NGA POTIKI A REHUA PA AT WAI-TOTARA.
See p. 199.

[*Messrs. Dix and Marchant, 1906*

deep narrow gully on its northern side, while to the south lies an arm of the main valley. The northern face of the spur is precipitous, showing a vertical cliff at places, while the southern face presents an easier slope much more accessible, and indeed easily ascended at all parts. The abrupt western end of the spur is steep in its upper part, and exceedingly precipitous lower down, a face easily defended.

Below the friable surface soil of this spur, and of all the surrounding country, lies a soft sandstone, a kind of indurated sand, for it can scarcely be termed stone, so soft is it. This sandstone, in many places, contains immense numbers of shells, as is noted in the description of the Ihupuku *pa.* Many of these shells resemble those of the oyster, and are of great size, while, although they look so sound and recent, yet presumably these oysters were stale when Adam was fresh, as a colonial writer puts it.

It is thus seen that the soft sandstone described lent itself easily to such work as scarping and trench making, so that, with a large number of workers, the terracing and other work performed at this *pa,* though done with primitive tools, need not have occupied a great deal of time. Now this remark may also be applied to many other old fortified places whereat are seen extensive earthworks. We note that there are huge walls, deep fosses, terraces that mean much excavation and shifting of earth. But, on the other hand, picture some two hundred men energetically toiling at excavating with implements of hardwood and removing the loosened earth in baskets. Such a party would perform a great deal of work in a month, and the writer has himself seen how quickly earth can be removed and conveyed some distance in baskets, and indeed has taken part in such a task.

The full length of the Potiki-a-Rehua *pa* is about twenty-seven chains, or say 590 yds. A glance at the plan, however, will show that it is narrow throughout the greater part of its length, for some distance exceedingly so. The makers of this fort took advantage of practically the whole of the top of the spur, from the place where it first narrows after leaving the parent plateau to its western extremity immediately above the river.

The first defence, commencing from the eastern end of the spur, is situated at the first narrow part of the spur top. It consists of a fosse and rampart excavated and constructed across the spur, which is here about 34yds. wide. The earth taken from the trench has been formed into a rampart on the inner or western side of the fosse. The fosse is about 12 ft. wide, and was probably nearly 12 ft. deep originally at its northern end, but considerably less at the southern end. The middle portion of the fosse, for about 12 yds., was not excavated deeply, not more than 3ft. or 4ft. apparently. No sign of a wall appears on the outer side of the trench, and it will be seen that the *maioro* or earthen ramparts are all situated on the inner sides of the various fosses. The entrance to the fort was in the middle of these defences; this opening would be blocked when necessary while the fosse would be crossed by means of a primitive and easily removed bridge. The outer face of the wall was a continuation of the inner slope of the fosse, and, when intact, this probably presented a face of about 12 ft., and upwards. In all cases denudation has much lessened the height of the walls and filled the various fosses. The spur top at this part is fairly level; about three chains east of this defence it merges into the plateau. It was on this plateau, according to local natives, that the *marae* or plaza of the village community was situated, there being no space for one within the defences.

From this outer defence one proceeds 75 paces westward along the top of the spur ere the next defence is met with. In this distance the top of the ridge widens to fifty paces, to contract again ere the second defence is reached, whereat the narrow part of the ridge top commences. From the wider part the spur also falls away to fosse No. 2; the wider part is well suited for hut sites. There are no signs of any flank defences on the north or south sides of this area, neither walls nor scarping, and presumably these faces were defended by stockades There is indeed a steep break down on the south side that may be partially artificial, while the northern face is very steep. On this latter side it is quite possible that there was, in former times, a scarp to supplement the stockade, and that it has become obliterated since the evacuation of the fort,

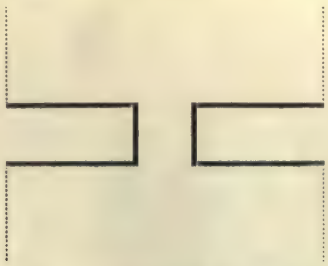
which occurred not less than seventy years ago. In this light friable surface soil, a small earthwork on sloping ground would tend to disappear rapidly, and in like manner a light scarp would soon lose its even contour by means of erosion. From the south end of fosse No. 1 the ground falls away with a gentle slope some 50 ft. to the steep break down mentioned above, and curious to relate, there is no sign of defences over this space, neither rampart nor fosse; it must have been stockaded. Below fosse No. 2, on the north side, is a water spring some 50 or 60 yds. down the steep sideling; this was probably the water supply of the eastern end of the *pa.*

Fosse No. 2 is thirteen paces long, which represents the width of the spur top of that point; its original width was probably about 10 ft., and its depth about the same. There is, as in the case of fosse No. 1, a bank or parapet of earth on the inner or western side of the fosse. Apparently the entrance to the second area of the *pa* was by the northern end of the ditch and bank. If so, it would consist of a narrow alley way between two stockades, such being the usual procedure, and such a passage is easily defended and easily blocked. No signs of the stumps or bases of stockade posts are now visible at this *pa.*

From fosse No. 2 to fosse No. 3 is a distance of fifty paces; and in this area the spur sinks and becomes very narrow, in one place only about 12 ft. wide. A reference to the plan will show that the whole central portion of the post is very narrow, and can have been little more than a long, narrow lane, stockaded on both sides and with numerous lines of defence across it, together with a few huts and pit stores wherever sufficient space could be found for them. But few people could have lived on this central part, the bulk of the inhabitants must have resided at the two ends of the *pa,* but principally at the western end. On the north side of this area the fall away is precipitous, though scaleable; on the south side the slope is much easier, but no sign of scarp or earthwork is seen on either side. On the south side the slope is now covered with light, open bush, from fosse No. 1 to No. 3, consisting of *tawhero, mahoe, ngaio, kaponga, karaka, houhi,* etc. The first three trenches, and most others, are situated at parts of the ridge where two hollows (one can hardly term them gullies) head one on either side, such places being the narrowest parts of such ridges. It is a sign of the pre-European, hence pre-gun, occupation of this *pa* that the lower part of the ridge is commanded by a hill within easy gunshot on the north, just across the deep narrow ravine.

Fosse No. 3 is about 45 ft. long, 10 ft. wide at the bottom, and now about 8 ft. deep, but was originally probably 10 ft. deep or more, on the east side. On the west side it is now 10 ft. or 11 ft. deep, the spur being higher on this side, though there is no sign of a parapet on the top of the scarp. The slope is easy to the south, but precipitous on the northern side. At the north end of the fosse a steep fall away may be the degraded remains of an artificial scarp.

Now, 8 yds. east of this fosse No. 3 is the narrowest part of the ridge summit, here about 4 yds. wide, and here also a sort of supplementary intermediate defence seems to have been made; consisting not of a fosse cut across the ridge, but in two sides of the ridge being cut away so as to form two rectangular excavations about 6 ft. wide, thus:—



and leaving a causeway in the middle. A stockade and gate certainly existed at such a place as this. Within this No. 2 area are some signs of former occupation; one being a semi-subterranean store pit about 9 ft. square and originally nearly 6 ft deep, while signs of pit stores (*rua*

kopiha) are also discernible, though now choked with debris. Needless to say that no sign of woodwork of the stores, huts or stockades is now seen here; all such disappeared, through the agencies of fire and decay, long years ago.

From fosse No. 3 westward to No. 4 is another fifty paces. Of this third area a portion widens out to 14 paces and is fairly level, suitable for hut sites, after which the spur sinks and narrows rapidly to fosse 4. On the south side of this area the slope is steeper than heretofore; on the north side the steep aspect is retained, but shows no sign of escarpment. On the western side of fosse No. 3 earth seems to have been piled up in the centre, but there is no evidence that a wall extended across the ridge top.

Fosse No. 4 is situated at a low and narrow part of the spur, and is deep at both ends, but has a raised central part, presumably so left when the ditch was excavated. It may be noted that this construction of defences at low parts of a ridge is one of the signs of a *pa* having been fortified in pre-gun, *i.e.*, pre-European times. The north end of this fosse, for about 18 ft. is 12 ft. wide at the bottom, though the original surface of the bottom is probably some feet lower than the present one, owing to the collection of debris in the fosse. The depth of the fosse at the inner end of this 18 ft. space must have been 16 ft. or more. The south end of the fosse for 24 ft. is now much filled in, apparently, or was not made so wide as the north end originally. The middle part of it, the elevated part, is 18 ft., and would appear to have been nearly 10 ft. higher than the two ends, perhaps the sandstone was harder here; anyhow the walls of the fosse would be practically as high here as elsewhere on account of the contour of the ridge. Passage here may have been by a bridge across this huge fosse. At present the east side of the central part of the fosse is 6½ ft. high, and the western side 8 ft. or 9 ft., so that the raised central part of the ditch cannot have been used as a causeway. At the north end of this raised part of the trench bottom, a store pit about 8 ft. square has been excavated; it is now about 3 ft. deep but contains much debris. It seems a curious procedure to have store pits in a defensive fosse, but such are often seen on the west coast. The purport of such a mode was the economisation of space. Many of the old time *pa* were crowded with huts, and pit stores are seen in all sorts of odd places, while a bluff of soft sandstone or indurated pumice gave facilities for the making of a cave storage places. Across fosse 4, from brow to brow, cannot be less than 20 ft.

From fosse 4 to No. 5 is but a short distance of 15 paces, while the width of the ridge top is but seven paces. The slope on the southern side of the ridge is an easy one along here, but on the northern side is precipitous throughout. The top of the ridge in this small area has been levelled, and in the middle are the remains of two semi-subterranean stores, one about 9 ft. by 7 ft., the other somewhat smaller, about 4 ft. deep now, but much fallen in. When roofed these stores must have occupied most of the available space of this diminutive area.

Fosse 5 is a most interesting type, though narrower than the preceding one, being about 15 ft. wide across the top, and 5 ft. or 6 ft. across the bottom, on which much debris now lies. The soil at this part appears to be a form of indurated clay, out of which a deep, wide fosse has been excavated, but leaving across the centre of the ditch a narrow wall of earth only 2 ft. wide standing intact as a causeway. Of so firm a consistency is the formation here that the sides of this narrow wall have been made vertical, thus forming the narrowest causeway of this nature yet noted by the writer in a pre-European *pa*. In one place about 3 ft. of the top of this wall has fallen, but the rest is as it was carved out long generations ago. Doubtless a thick growth of fern and scrub has tended to preserve it from the weather. This extremely narrow passage must have been easily defended in the days of the levelled spear.

Describing this fosse 5 as it is, in two parts, the southern end is 24 ft. long, and was probably about 10 ft. deep on the eastern side, where no wall has been made, and about 14 ft. on the west side, or even more, not to speak of the stockade that must have originally surmounted the wall on that side of the ditch, even now this side is 11 or 12 ft. high. The northern half of the ditch is 27 ft. long, cut square, deep and steep, in fact the walls of this trench 5 are vertical.

Width of original bottom about 9 ft. Depth on east side about 8 ft., and on the west side 12 ft., but a considerable amount of detritus overlies the original bottom of the fosse. It would be of interest to clear off this debris in some of the ditches and note the depth of deposit, and the true bottom of these excavations. The base of the eastern side of this fosse does not appear to have been weathered at all, having possibly been much protected by vegetation, inasmuch as the observer can almost believe that the marks of tools are here visible. Also, sad to relate, some dissolute wanderer, rejoicing apparently in the name of Mooney, has engraved his unhallowed name at the base of this wall.

As usual no earthen rampart has been erected on the outer or eastern side of this fosse, but apparently one has been constructed on the inner or western side, although, owing to detrition, its proportions are now but small. One still notes, however, a central opening in this wall, at the end of the causeway, through which folk entered the fifth area of the *pa*. There must have been a stockade and gateway here.

From fosse No. 5 to No. 6 is some 90 paces. This long, narrow area is the lowest part of the ridge top, it rising to east and west from here; it is from ten to fourteen paces in width and has been levelled for the accommodation of huts; not, indeed to one uniform level, but into irregular terraced forms, as is often seen in these old fortified places. At the east end of this area are three pits of unusual depth; these were evidently store pits for *kumara* (sweet potato), not the well-like pit, but the one excavated as a rectangular open pit and then roofed over. No. 1 is some 9 ft. or 10 ft. wide and about 13 ft. long, walls almost perpendicular, depth now is 6 ft. but a considerable amount of debris overlies the original floor. Pit No. 2, is about 15ft. by 10 ft. and now 6 ft. deep at the sides, but contains much accumulated debris. It is 9 ft. deep at the western end, where earth has been piled up. The space between pits 1 and 2 is about 5 ft. Pit 3 is 11 ft. by 9 ft., about the same depth as the other two, and the space between 2 and 3 is about 3 ft. Thus all three are in a line, end to end, with a few feet between them. Mounds of earth show how the ends have been earthed up, and the spaces between the Λ shaped roofs of Nos. 1 and 2, and 2 and 3 have evidently been filled up with earth, which has become fairly well solidified, so that these have suffered but little from detrition; a good growth of grass preserves them. Close to the western end of pit 3 a hut site is plainly discernible.

About 9 yds. west of pit 3 lies pit 4, which is about 12 ft. by 10 ft. and 6 ft. deep. 5 ft. south of pit 4 is a smaller one, some 6 ft. by 5 ft. and now about 30 in. deep. Five yards west of pit 4 is pit 5, much broken down, probably about 12 ft. by 8 ft. originally, now about 5 ft. deep. Some distance west of pit 5, on the northern slope below the crest are three store pits cut out of the stiff soil of the steep sideling, but now much choked with debris. Fig. 6 on the plan shows the site of a store or hut, while 7 is a *rua kopiha* or well like pit, such as were used for storing the sweet potato in, and it is one of those curious dome roofed pits. A depression, probably a hut site, was noted at 8. On the south side of 6, 7 and 8 a terrace 12 ft. to 16 ft. wide has been formed along the side of the spur, some 8 ft. below the flattened summit; this was probably formed for hut sites. The whole south side of this area is a comparatively easy slope with no sign of any escarpment. The northern side carries the aspect already described, steep but scalable; shell refuse is here seen. So far as can be judged the flattened summit only of the ridge was here enclosed by the stockades on the north and south sides. The lines of vantage for such a defence are easily discernible in most places, but at some, such as the ends of the various trenches. and the southern side of area 1, the positions of the stockades are doubtful. There is room for a good many huts in this fifth area between trenches 5 and 6.

Fosse 6 is fifteen paces long and extends right across the ridge, which is still narrower; it is about 10 ft. deep on the east side, and 12 ft. to 14 ft. on the west side. The bottom is 10 ft. wide, but evidently the original bottom of the ditch is some way below the present surface; denudation has been going on for generations. Across the top of the ditch from brow to brow is about 20 ft. and no sign of parapet is seen on either side. The passage may have been by bridge, but it is quite possible that none existed across this fosse, but that it passed along the hill

side at the northern end of the fosse, inasmuch as a ledge is seen passing down to the level of the bottom of fosse 6, to rise again to the summit west of No. 7. If so, then this would be a narrow alley way between two stockades, and easily defended, while no means existed of crossing the wide fosses 6 and 7. From brow to brow No. 7 is about 30 ft. wide and it would be no light task to pass this in the face of a numerous enemy. It cannot be stated with any certainty that this side passage existed, but it seems probable.

From fosse 6 to No. 7 is but a space of 27 ft. which is about 30 ft. wide, and almost in the centre of this area is a pit 15 ft. by 10 ft. in a good state of preservation. The walls, which show an exposure of soft strata of sandstone, are almost vertical, and the present depth is 5½ ft.; original depth possibly 6½ ft. This pit is right in the fairway of any passage along the summit of the spur, and is much larger in proportion to the size of this small area of 27 ft. by 30 ft. than is shown on the plan. This small, deeply trenched area must have been a little *pa* in itself, and indeed the same may be said of all the areas or divisions east of it. There is a well pit on the northern side of the larger pit. The northern face of this area is precipitous for 12 ft. or 14 ft. down to the ledge above described, and precipitous again below that ledge. This lower precipitous face or scarp extends for some distance east and west, and may be artificial, but in such soft material erosion would soon destroy the proofs of human handiwork, not to mention the trampling of stock. The southern side of this area preserves the slope that is fairly uniform throughout, though somewhat steeper here than in most parts.

Fosse No. 7 is the deepest and most formidable fosse of all, for it is the last defence of that nature, and upon it would depend the defence of the eastern extremity of the main portion of the *pa*. This fosse is not carried straight across the ridge, but is curved at the southern end, and swings round westward to protect the face of the main *pa*. Thus it is 24 yards long, and was originally probably 12 ft. or 14 ft. wide at the bottom, but it is considerably choked with debris; it is 30 ft. wide at the top of its central part. The eastern side of this fosse is about 10 ft. or 11 ft. deep, or high, for the ridge top between fosses 6 and 7 seems to have been cut down to a considerable extent. On its western side fosse 7 now shows a formidable scarp of some 25 ft. in height, part of which is due to the rapid rise of the ridge at this place; while area 6 having been cut down, such process lowered the height of the scarp on the east side, and exaggerated the proportional height of the western side. The original height of the scarp on the western side of the fosse can scarcely have been less than 30 ft.; add to this a stockade of say 10 ft. in height, and you have a formidable defence 40 ft. high, a most effectual barrier against assault by neolithic man. This face shows about 2 ft. of soil on the top, then 6 ft. of indurated clay, and under that a soft sandstone.

The high ground of area 6 extends along the eastern side of fosse 7 to its southern end, with diminishing height. The apparent causeway across the ditch at this end has probably been formed by earth washed down a cattle track that runs up the hillside.

West of fosse 7 comes the first terrace of the main part of the *pa*. The ridge has been cut down here so as to form a terrace measuring some 30 ft. in width, while the steep scarp at its western extremity is about 14 ft. in height; this was yet another defence, and would be surmounted by a strong stockade when the place was occupied. This terrace is continued right along the south side of the main *pa*, but it is not level, as it rises to conform to the shape of, or to run parallel with, the top of the ridge. It is about 12 ft. wide, but has probably been narrowed by frittering away of the outside, and by the crumbling down of the scarped face above it. At present it is the sward of grass that prevents the loose, black friable surface soil of this area from being washed off the ridge. The inner scarp above this terrace is from 14 ft. to 16 ft. in height. Where breaks occur in the sward of grass are noted shells and old oven stones, etc.

Continuing along the summit of the ridge westward from the first terrace, the first item noted, within 3 ft. of the scarped slope, is a pit 12 ft. by 10 ft., which is in the middle of the ridge top, here only about 20 ft. wide. Within about 3 ft. is the end of another pit, about 5 ft. deep, but

much eroded. At the east end of this part a narrow trench has been cut across the ridge, tapping the end of the pit, possibly to drain it, this ditch is 4 ft. wide at the top, about 4 ft. deep, and narrow bottomed; it has a suspiciously modern aspect.

From here westward the ridge top rises, and has been cut down and levelled; it rises westward for 73 paces, when another scarped bank is encountered; it is now 7 or 8 ft. high. This scarp does not continue squarely across the ridge, but at the northern side swerves to the west and is lost in denuded confusion.

Of this area, the southern face overhangs the long terrace already mentioned, while the northern face is precipitous for some yards, and very steep below that, possibly some scarping has been done here. At the base of the precipitous part are some store pits of the *rua kopiha* type; further east a ruined dome shaped store pit is seen.

The ridge top here has been levelled, evidently for building purposes, and some depressions probably show positions of store pits. House sites, of the *whare puni* or warm house type, are plainly seen toward the western end of this area, five such are clearly discernible, while six pit stores are seen on the northern slope, where refuse from kitchens, such as shells and charcoal, has been thrown away by the dwellers in this primitive stronghold. At the western end of the north side of this area a sunk passage, perhaps excavated, leads down to a narrow terrace on the northern slope. This terrace is about 20 yds. long; a pit store is noted at the base of the scarp.

The next area is but 21 paces in length, when another wall of about 6 ft. is met with; the ridge still rising and wider than heretofore. In this area are seen the sites of four buildings that may have been stores or semi-subterranean dwelling places. From this bank another 50 paces brings us to the highest part of this end of the spur, the citadel of the fort, and all lines of defence beyond this were for the purpose of repelling attack from the S.W., west, and N.W. From this summit a fine view is obtained of the surrounding country, the valley of the Waitotara, and the distant ocean.

This area has been occupied by dwelling huts and store pits. Four sites of huts are still plainly marked, also a deep rectangular pit, and two *rua kopiha* or well-like pits. The hill slope below the northern side of this area is extremely steep. Within half a chain of the highest part of the spur a terrace commences on the northern side about 20 ft. below the summit, and reaching the spur running down to the river; this terrace branches into two, which continue round the west face of the ridge, having another terrace below them. There is often no apparent continuity about these terraces, and no attempt has been made to construct them horizontally along the sidelings. The supplementary terraces were not, apparently, graded into the main lines of terrace that they impinge upon, but seem to run out before such lines are reached. It seems probable that, at such places the lines of stockade that ran along the outer edge of terraces were continued so as to block access to the next terrace, save a narrow gateway that could be easily blocked and defended. The Maori constructed narrow alleyways and narrow entrances when building his forts.

At the north-west corner of the fort a narrow spur running down towards the river has no less than nine short terraces cut out of its profile. These little terraces are regular and look like a flight of steps, and comprise a striking feature in viewing the *pa* from the south. These would form hut sites.

On the steep northern slope of the highest part of the *pa*, is seen a very small, well preserved, circular, dome-roofed store pit of most symmetrical form; it contains a remarkably fine growth of ferns. Another such pit hard by is choked with debris, and more could no doubt be located.

Commencing again on the east end of the highest part of the ridge, and proceeding westward along the southern slope, we find that our south side terrace divides into two, which run into each other again further on. Below these again is a third terrace, which is the lowest and outermost part of the *pa* on this side, while it shows the unusual and interesting feature of a wall of earth along its outer margin, now much denuded but clearly intended as a part of the

defensive works. This would, of course, be supplemented by a stockade. The upper terraces do not possess such a wall. Further on, near the end of the ridge, the two lower terraces run out, or merge into the upper one, which, here 30 ft. wide, divides into two and sweeps on round the south west point of the *pa* to the western face, while again a lower terrace abruptly starts without apparent connection, and runs some 20 feet below. This lower one also has an outer bank or parapet, now from one to four feet high. The two main terraces run right round the western face to the precipitous northern face, where they cease abruptly, while another is at a higher level, the latter showing an old store pit. Above these the spur face rises to its highest point in four wide but short artificial terraces, not marked on the plan, together with curious minor subsidiary terraces on the flanks, all being sites of dwelling huts in former times.

At the south west point may be seen the old entrance through the outer earthwork from the path that ran up the spur from the river bank near the bridge. From this outer terrace the mode of entrance is not so clear, but the whole *pa* was undoubtedly divided into many defensible areas by its scarps, ramparts, fosses, and stockades along the outer edges of terraces, for such was the Maori method of fortifying villages.

The slope from the summit down towards the south west, carved into the wide terrace formations already mentioned, was the site of dwelling huts and storage pits. This slope constitutes the widest part of the *pa*, and to recapitulate the description of it briefly, commencing from the bottom, we have three wide high terraces, one above the other, the lowest one having a heavy earthen rampart on its outer edge, while the second one also shows the remains of such a wall. Then comes a short wide terrace, then another such, and then two shallower ones, ere the summit is reached. The two lower terraces are backed by scarps of 16 or 20 feet, and are wide enough to accommodate good sized huts, besides leaving room for defensive operations on their outer margins. The other terraces have inner scarps of from 6 ft. to 10 ft. high.

With regard to the water supply of this stronghold, there is a spring on the southern slope below the triple terraces that is scarce 100 yds from the outer line of defence; also the spring on the north slope already mentioned; water was probably obtained from these sources rather than from the creek in the deep ravine to the north.

The fine alluvial flats of the valley below would be ideal grounds for the cultivation of the sweet potato, the principal crop of former times.

When occupied, the Potiki a Rehua must have been a remarkably picturesque place, on account of its terraced slopes, stockades, earthworks and deep fosses, while its commanding situation would show it off to advantage.

It seems a pity that such places of interest as the Potiki a Rehua *pa* and the Weraroa redoubt, just north of it, are not preserved by being fenced in, for they are being gradually obliterated by the trampling of stock.

Local natives inform us that the father of Titoko Waru, the Hauhau leader of the 'sixties,' was killed during an attack on Potiki a Rehua. At present these local natives, who are of the Nga-rauru tribe, are living in a village near the bridge, on the left bank of the river, and near the above *pa*, and at Ihupuku further down the valley. These are the sons of the Hauhau hostiles who fought us in the 'sixties,' and tried to stop all white settlement on this coast. Their hostility was marked with more savagery and bitter hatred than was shown on the east coast. The Weraroa *pa*, abandoned by these hostiles in the middle 'sixties,' was situated about a mile north of the Potiki-a-Rehua.

Names of trees mentioned above:—

Tawhero = *Weinmannia sp.*
Mahoe = *Melicytus ramiflorus*
Ngaio = *Myoporum lætum*
Kaponga = *Cyathea dealbata*
Karaka = *Corynocarpus lævigatus*
Houhi = *Hoheria populnea.*

FIG. 72a.—PA ON AUCKLAND ISTHMUS.

See p. 210. [*Col. Boscawen, Photo.*

FIG. 73.—TERRACED HILLS OF AUCKLAND ISTHMUS.
See p. 210.
[*Photos by Col. Boscawen.*

Terraced Hill Forts.

Some of the most interesting of the old native forts are of this type, likewise many of the largest. They were also probably the most picturesque when occupied; this remark applying especially to the extensive *pa* of the north, where many of the volcanic cones that are so remarkable a feature of that region have been terraced to their summits. Residential terraces are also seen inside the craters. Some of these terraced hills have demanded an enormous amount of labour in excavation, when the lack of tools is considered. These terraces are termed *parehua* in the East Coast district, of which word *paehua* is a variant form, and *whakahua* is also applied to a terrace. The Tuhoe tribe appears to refer to them as *tuku*. We see these terraces of many widths, from 8 ft. up to 40 ft. and occasionally over. Some of the escarpments are of considerable height, 20 ft. is not uncommon, and some far exceed that figure. They were made with different batters, according to the material being worked; the steeper the scarp the easier to defend. As a rule the terraces were not very long, it being a recognised rule of native military engineers to break the level at intervals. Thus you may traverse a fine terrace 20 ft. wide for 40 yds. and then find it discontinued, with a sudden drop or rise of 4 ft. to 10 ft. to the next terrace. As this peculiarity occurs in soil free from rock and easily worked, it is clear that such a formation was adhered to simply to facilitate defence, which it would undoubtedly do, for these level breaks, as well as the scarp brows, would be stockaded. The dwelling huts seem to have been erected on the inner sides of terraces, thus leaving space outside them for passage and defence. Each terrace was a fortified and defensible position in itself, each could be separately defended, and would have to be separately taken. In defending such a place the non-combatants were retired to a terrace above the one being attacked. Rude forms of ladder were sometimes used as a means of reaching an upper terrace.

The numerous remains of old *pa* on the hills near Auckland are of much interest, but no one seems to have put any detailed description of them on record. Of those situated on Mounts Wellington and Halswell, Colonel Mundy remarks, in *Our Antipodes*—"The appearance of both affords evidence of a numerous and warlike population, now passed away. Each is cut into several ranges of terraces, with breastworks and excavations originally roofed in, and forming the dwellings and stores of the garrisons of these fortified hills, once raging with their own subterranean fires. For half a mile all round the base of these mounts are to be traced, among the high fern, hundreds of scoria walls, evidently the enclosures of former potato gardens, and piles of white shells of the *pipi*, or cockle, brought from the seashore for food. Mount Halswell .....possesses a singularly strong position.....The remains of ancient fortifications to the very top are quite manifest, and the base is defended by a wide and deep swampy ditch, crossed by a causeway, both of which may have been produced by volcanic accident, although they bear all the appearance of a ruined artificial fosse. There are natives, and even white men, who recollect the remnants of wooden palisades on Mount Halswell."

At a place on the Tamaki this writer speaks of seeing "Indications of very extensive and evidently wholly artificial works, with a deep ditch, high curtains and gateways, and, in advance of the main work, a regular demi-lune on the land side. On one flank of the height thus fortified is a large circular basin of deep water, in which any number of the defenders' canoes may have ridden perfectly safe from an enemy."

Those of the Auckland series examined by the writer show exceedingly few signs of breastworks, and it is doubtful if any of the pits were used as dwelling places.

In speaking of the many old *pa* that formerly existed in the vicinity of Auckland city, and of which he gives the names of twenty-five, the author of *The Peopling of the North* remarks—"When we contemplate the extensive ramparts of these old *pa*, the excavations for houses, and food storing pits, we are lost in amazement at the work performed in the construction of such fortifications, made as they were by the *koko maire*, or wooden spade. On each terrace there was a line of palisading, often made of large tree trunks, the tops carved with conventionalised human heads, with ornamental gateways, the *tihi* or citadel crowning all, where the principal

chief lived. Imagine the toil implied in provisioning Mt. Eden for a siege!—the stores of food, firewood and water that would have to be conveyed there, all of which work fell either to the women of the tribe, or the slaves.....Water was stored in large wooden *kumete* (troughs), or otherwise in calabashes, and on the water supply depended the safety of the besieged. Owing to the difficulty about water, I do not think that any *pa* like Mt. Eden could ever have withstood a long siege. It is probable that, in its day, Mt. Eden *pa* would hold a population of at least 3000 people."

It must again be explained here that earthen walls or ramparts are very rare in these old *pa* of the Auckland district. They are rare and of small extent. The defences consisted of escarpments and stockades.

I have employed the term terraced hill forts to describe these places about to be reviewed. Of course nearly all hill forts were terraced, this was necessary in order to obtain hut sites. The marked difference in the extensive terraced hills of North Auckland is that hillsides were far more extensively terraced, and that fosses and ramparts are almost non-existent, the defences consisting of scarped faces surmounted by stockades. See Figs. **72**a, **73**, **74**, pp. 208-209-214.

Of these hill forts in the vicinity of Auckland Hochstetter wrote:—"They are terraced, that is to say terraces are cut round the declivities 10 ft to 12 ft. high.....Upon these terraces double rows of stockades were planted in olden times, and deep holes dug, covered with branches, reeds, and ferns, like wolf traps, for the purpose of insnaring the assailing foes. Other pits, less deep, connected by subterranean passages from above and below, and having ingeniously concealed outlets, served the defenders of the fort as secret paths and hiding places, or as ambuscades, from which they sallied forth upon the assailants; and in a third sort of holes in the ground they had their provisions stored away. The observer is justly struck with astonishment on seeing how ingeniously and practically the Maoris had planned their forts, and what colossal works they were capable of executing with extremely rude and defective instruments of wood and stone.....Behind all those palisades and ditches encirling the slope of the mountain, high on the top, lived the chief, with his family and the nobles of his tribe."

The double rows of stockade on terrace brows are not proven, and pitfalls were not a Maori defence; nor were secret artificial subterranean paths a common feature, but extremely rare. Subterranean tunnels, old lava flow channels, are, however, numerous in the district, some of which were used as places of concealment for bones of the dead. It was not customary to erect a double stockade on a scarp brow.

Of these terraced hill forts we see specimens in other parts but they are much more numerous in the north than elsewhere. The Ohae *pa* at Ruatoki, and Rakei-hopukia at Te Teko are old terraced hill forts on a small scale, not of the extensive northern type.

In describing the district between Mokau and Titoki (two miles south of Puke-aruhe) Mr. Percy Smith writes:—"This territory has many fine *pa* in it.....There is one named Puke-kari-rua, just about a mile south of Mokau, standing as a peak on the range which rises some 800 feet from the coastal flats, that is remarkable for the number of terraces still very plainly to be seen from the high road. There are eight of these terraces, each one of which, in former times, would be palisaded."

Angas writes:—"The country around Auckland was formerly occupied by large and powerful tribes, of which the only remaining vestiges are to be found in the terraced walls of scoriæ built on the slopes of Mount Eden, and others of the extinct craters, and the whitened heaps of *pipi* shells that lie scattered in immense quantities about these slopes, that once formed the sites of their fortified *pa*. Clearings in the scoriæ are also discernible at the foot of the craters, where the blocks of lava are piled up in heaps: these were evidently removed by the natives to form gardens for the cultivation of their *kumara*and other vegetable productions."

"Terraced walls built" is scarcely a happy expression, they are simply escarpments, occasionally supplemented with rubble stonework.

Earle, writing in the 'twenties' of last century, remarks of one of these carved hills:—"The top of this hill was level and square, and was capable of containing several hundred warriors. It was cut into slopes all round, and fortified by stockades in every direction, which rendered it impregnable."

The terraced hill forts described below are remarkable for the almost entire absence of fosse and rampart as defences, their defences consisting of scarped faces and stockades. Now there are two aspects of these terraced hill positions. One type is marked by bold terracings of a hill, as seen in the Auckland district, while the other shows no extensive or continuous terraces, but merely many small levelled areas, linchets that would accommodate one or two huts. In some instances no sign of earthwork defences is seen, and stockades must have been the only defensive works. The Heipipi and Otatara *pa* of the Napier district are illustrations of this second type. The same aspect was noted with regard to an old time hill village of the Wahine-iti tribe at Wai-o-matatini.

The Heipipi Pa.

This old *pa* is situated at the small settlement of Petane, near Napier, of which place the native name is Kai-arero. Its situation is on the ridge a short distance north of the village. The sloping ridge top has been occupied from the lower end of the ridge just above the road backward and upwards for forty chains, so that fully half a mile was so used as a *pa*. As a rule the inhabitants apparently only occupied the top of the ridge, but at two places, one on the northern and one on the southern side, they have lived on the slopes for some distance down, that is at those parts that, by being less steep, lent themselves to occupation. On the northern slope are seen many *rua tahuhu* or pits of semi-subterranean food stores. As at Otatara none of the well like pit storage places were noted. The flattened hut sites of the former inhabitants are seen in numbers, and shell middens are also in evidence.

The lower part of the spur lies about north and south and shows two transverse earthworks and ditches of no great size. The eastern side drops steeply to the road, while the western side is more sloping, and shows a scarped face formed whereby to defend the ridge top. A part of the ridge shows no signs of having been occupied, then terrace like hut sites, one as large as 40 ft. by 24 ft., are encountered, also the abraded remains of a scarp, on part of which appear to be some signs of the former existence of a superimposed rampart. Just south of this scarp is a huge rectangular pit about 30 ft. by 18ft. in size, now nearly 6 ft. deep, though containing much debris. Such a storage place would contain a huge quantity of sweet potatoes, for which purpose they were formerly used, being provided with a Λ shaped roof.

This position, like that of Otatara, near Taradale, is remarkable for its singular paucity of earthwork defences. A few short transverse ditches and walls at the lower end of the ridge, a short scarped flank defence at the same part, and then nothing more of such works is seen until we reach the farther extremity of the occupied area half a mile up the ridge. The whole of the flank defences, and most of the transverse ones, must have consisted of timber stockades. It is difficult to conceive why such defences should not have been supplemented and strengthened by escarpments; the nature of the soil lending itself to such a mode of defence. The existence of the few earthwork defences shows that the place was fortified by its inhabitants, and not an open village.

Some of the pit stores are of remarkable size, thirty feet and more in length. One measured affords 4,200 cubic feet of storage space, which would be increased were it cleared of debris that has collected in it.

As we advance along the rising ridge it curves round to the westward and the originally occupied area increases in width, down the northern slope to the site of a European homestead situated on a terrace like formation about two chains wide, and also at one part down the slope facing Petane (= Bethany) village. Neither slope presents any obstacle to the approach of enemies. At one place the inhabited area is about eight chains in width, and the slopes show small artificial terracings formed for the accommodation of dwelling huts and storage pits.

A scarp seems to have assisted in the protection of the highest occupied part of the ridge which, at 40 chains from the starting point, lies east and west, and is narrow, having a transverse defence of ditch and bank that might have presented a face or scarp of ten or twelve feet originally, for the earthworks are much eroded.

Though half a mile in length yet the occupied area was but small in comparison with Otatara.

There may have been originally some light flanking scarps in places that have become indistinguishable by erosion and abrasion, which in the light surface soil would no doubt be considerable.

There is nothing picturesque or remarkable about Heipipi except its situation on a ridge top, from which a fine view is obtained of coast and ocean. No massive earthworks are here, and those who have heard of this old and historic place must be disappointed on examining it. There is no feature that lends itself to illustration either by camera or cross sections.

The Heipipi *pa* is said to have been occupied by descendants of the Maruiwi aborigines known as Whatu-mamoa up to about 300 years ago. Some account of an attack on it will be found in the *Journal of the Polynesian Society,* vol. 13,, p. 154. The occupants were driven from the district.

From this hill the men of old viewed the whole of Hawke's Bay from Cape Kidnappers to Te Mahia, as also the coast line, the Inner Harbour and Scinde Island, so called. In the Inner Harbour are situated the islets known as Koparapara, Te Iho-o-te-rei and Tapu-te-ranga, formerly occupied by the natives.

Large shell middens existed on the two former isles and human bones have been found there, probably the remains of the inhabitants killed by northern raiders early in last century.

The point projecting from the western shore near these two isles is now known as Maori Head. This precipitous sided formation is connected with the mainland by a very narrow neck with a cliff on either side, hence it was formerly utilised as a *pa.*

In some places the ridge top of Heipipi has been levelled for hut sites and store pits, other parts show small hut sites at different levels; these small terracings or linchets are innumerable.

When the site was being prepared for the European homestead on the northern slope, human bones, much decomposed, were found.

The lower end of the *pa* near the road is marked by a small transverse scarp and superincumbent wall. About four chains up the ridge from this is the double wall and ditch mentioned above. Stone adzes have been found at this place.

As a rule the fortified places on the eastern side of the island were defended by earthen walls, ditches and stockades. The writer has examined many such, but has not noted the peculiarly open character of the Heipipi and Otatara positions in either the Poverty Bay, Taranaki, Auckland or Bay of Plenty districts. We know that Heipipi is said to have been occupied by a clan of the Maruiwi or Mouriuri folk, the original people of New Zealand. It might be assumed that the Heipipi type of *pa* was that used by the aborigines, but we know that the Taranaki district was occupied by that people, and the type does not exist there. The Pohokura, Urenui and Okoki *pa* at Urenui are said in tradition to have been some of the fortified places of Maruiwi, but their defensive earthworks are of the ordinary Taranaki type, and in no way do they resemble Heipipi and Otatara. There is another point of view, which is suggested by the fact that such places were occasionally re-built or re-modelled during centuries of occupation.

The name of the Heipipi *pa* was given to another at Kāhu-nui, on the east side of the Ruamahanga river in the Wai-rarapa district. It was occupied by the Hamua division of the Rangitane tribe. An old aphorism pertaining to this place was:—

"Ko Rangi-tumau te maunga, ko Heipipi te pa."

FIG. 74.—SITES OF OLD TERRACED HILL FORTS, AUCKLAND ISTHMUS.
[*Col. Roscawen, Photo.*
See p. 210.

(Rangi-tumau is the *maunga* (range, mountain) and Heipipi is the *pa*); this form of distichous epigram being much favoured by the Maori. It is met with in the form of:—

"Ko Tongariro te maunga; ko Te Heuheu te tangata o raro."

(Tongariro is the mountain; Te Heuheu is the person beneath it) meaning that the latter is the most important person of the district, the principal chief. The mountain and the chief are the two noteworthy items of Taupo.

Otatara.

This old time *pa* is situated on a hill on the left bank of the Tutae-kuri river at Redcliff, Napier district. The site comprises several spurs, where the end of a ridge abutting on the river breaks down into several short and somewhat steep spurs. For half a mile along the southern and eastern slope, extending to the summit of the ridge, are seen innumerable small terracings betokening former occupation, for all these little terraces were the sites of either dwelling huts or storage places. The latter are all of the semi-subterranean type known as *rua tahuhu*, rectangular oblong pits over which a Λ shaped roof was built. No sign was seen of any *rua kopiha* or well-like wholly subterranean storage places. Of the rectangular pits a great number are seen, varying in size, the largest noted was 30 ft. long. See Fig. **75**, p. 217.

Opposite the Redcliff bridge is what was probably the principal entrance to the *pa*, situated on a secondary or interior spur of easy grade and a broad face, flanked on either side by high, narrow topped and prominent spurs presenting steep faces. Across the face of the gently sloping intermediate spur runs a defensive earthwork, which extends up the spur to the south. About the middle of it is an opening that probably represents the old entrance. The earthwork wall is a light one and would look absurdly so by the side of the great ramparts of such a *pa* as Manu-korihi. A short line of similar light earthwork was noted on the top of the spur west of the above, and these are the only defensive earthworks seen at Otatara. There is no sign of any system of circumvallation, of outer or inner ramparts, trenches or scarps. It is therefore clear that, if Otatara was a fortified position, its defences must have consisted of stockading. The soil is an easily worked one and, at Taranaki, the Bay of Plenty, and many other places, such a place would have been scarped, trenched and walled into a very strong position.

The Otatara *pa* or settlement covered in all about 90 or 100 acres, and over this area are innumerable small irregular terracings of the hill slopes, on which the huts of the inhabitants were situated, as also their pits for the preservation of their *kumara* (sweet potatoes) and other food supplies. No terraces of any considerable length or width are seen here. This feature, as also that of the lack of earthwork defences, is also seen in the Heipipi *pa* at Petane, and forms an interesting item for comparison. In the great *pa* areas of Taranaki and the Bay of Plenty this type may be looked for in vain. Small specimens may be noted in the Wellington district, where, however, the formation does not lend itself to the construction of earthworks or the excavation of fosses.

The southern slopes of Otatara show these signs of close occupation for about half a mile, and the place must have had a large population when inhabited. The multitudinous linchets hewn out of the slopes would accommodate thousands of people. The vast number of such dwelling places, together with the many store pits tend to prove that the folk who occupied Otatara must have been diligent cultivators, and that their principal food supply consisted of the *kumara*. The rich flats of alluvium lying at the base of the hills provided them with the very best grounds for cultivation purposes. On all three of the radiating spurs are seen pits where such supplies were stored, many of which pits would accommodate a very large quantity of food products.

With regard to the water supply of Otatara, it is clear that water was obtainable at several places in the gullies within the occupied area.

The finest and best preserved residential sites and store pits are seen on the spur near Mr. Donnelly's residence. Here, as elsewhere, it is seen that the upper parts of the ridge were

closely occupied, so numerous are the linchets, while the lower slopes, though often presenting a much easier gradient, show few such tokens of occupation, or absolutely none at all.

When inhabited there was probably a stockade enclosing the whole occupied area, as also lighter palisadings round each little residential site.

Owing to the lack of earthwork defences and large terraces, Otatara does not lend itself to illustration by means of photography, plan, or cross sections.

It is possible that such a numerous people as the residents of this place must have been was in no great danger of being attacked, or that it was inhabited in comparatively peaceful times. Again there is some evidence to show that these old time tribes and correlative clans of the eastern side of the North Island were not such constant fort-dwellers as those of many other districts. Cook found the natives of some places on the east coast dwelling in unfortified villages.

About half a mile west of Otatara is a small *pa* situated on a spur that shows signs of earthwork defences. It is situated near the river, but was not examined. A further exploration of the old fortified places of this district would be of interest in order to show how far the singular type of *pa* represented by Otatara extended.

There is at present a small native community living at Wai-o-hiki, on the right bank of the river near the bridge at Redcliff, just east of Otatara.

Otatara is said to be a very old *pa* and to have been originally occupied by the clans known as the Tini o Awa and Te Whatu-mamoa.

The Heipipi and Otatara *pa* show innumerable small terrace formations to accommodate one or two huts each, seldom more. These diminutive terraces in no way lent themselves to defence, as did the big terraces of northern forts. The latter comprise quite a different type of terraced *pa,* as will be seen when we come to describe them. One would imagine that the inhabitants of the above two places were but little troubled by enemies, so neglectful were they of earthwork defences.

It seems improbable that Otatara was the same as Nga Whakatatara, the place mentioned in the following tradition:—

The Puketapu *pa,* near Omahu, Hastings district, had two *tihi* (summits). It was occupied by some Kahungunu folk at the time when the clan Ngati-Ira, fleeing from the wrath to come, or rather the wrath that had come, marched southward from the East Cape district in search of a new home. These two clans fought at Nga Whakatatara, from which field the local folk retired to Marae-kakaho, pursued by the invaders. When below Puketapu, one Manuhiri, a chief of that place, called out to Koura, leader of the Kahungunu party, then fighting:—"*Koura, E! Unuhia! E kore e taea, he uru ngaherehere.*" (O Koura! Withdraw ! It cannot be done; they are as trees in the forest). Koura, who had received many wounds, called up in reply:—"*E ta! Nawai te koura ka kai ki roto ki tapui e kore e taea te whakaunu; ina ia koe e kai kanohi mai.*" (When the *koura* (crayfish) has eaten the bait in the lobster pot he cannot withdraw, since you merely look on.) Here the doomed fighter, with the reckless humour of the Maori, punned on his own name ere he trod the broad way of Tane that leads to the spirit world.

The following is the tradition concerning Nga Whakatatara, as preserved by Wai-rarapa natives:—

In an account of the migration of Ngati-Ira from the East Coast to Wai-rarapa, given by an old native many years ago, occurs some description of the *pa* Nga Whakatatara, near Pawhakairo. This description cannot be applied to the remains of former occupation now seen at Otatara, and, according to native evidence, the earthworks mentioned have been destroyed, though still in evidence as late as the year 1853.

When Ngati-Ira, under Te Wha-kumu and other chiefs, reached Heretaunga, they settled near Wai-o-hiki and erected Nga Whakatatara as a protection against the Rangitane, Tini o Awa and Ngati-Mahanga tribes then occupying that district. These people resented the intrusion of the Sons of Ira the Heart Eater, and, gathering at the *pa* known as Te Puketapu, at Omahu, under the chiefs Pae-whenua, Te Kowhaiwhai and Hau-te-ranga, they resolved to attack Nga

FIG. 75.—OTATARA HILL VILLAGE SITE, NEAR TARADALE.

Showing how this form of hill village site presents no prominent artificial feature. The many small linchets are not discernible. The deeply excavated pit is the only clear sign of man's handiwork.

See p. 215.

Whakatatara. Their forces were divided into three parties, one of which advanced to the attack by the channel of the Tutae-kuri river, another advanced along the ridge called Te Tauwhare, while the third halted at Wai-o-hiki to await developments, and also to endeavour to entice Ngati-Ira from their defensive position. According to tradition Ngati-Ira succeeded in defeating all three forces.

The description of the defences of Nga Whakatatara, as preserved orally among Ngati-Ira, is as follows:—

The outermost defensive work was a fosse four fathoms wide and proportionately deep. Then came an earthwork rampart three fathoms in height and half a fathom wide on the top. Inside this, and distant only one fathom from it, was another rampart two fathoms in height and sufficiently wide on top to allow of the defenders standing thereon to repel assaults. It is explained that, should an attacking force succeed in entering the narrow passage between the two ramparts, the members thereof could not use their long spears to advantage, owing to the cramped space, while the defenders on the top of the rampart had every advantage in attacking an enemy standing twelve feet below them.

Inside this second rampart was another, but at what distance is not mentioned. It was of the same dimensions as the second one. The only fosse defence was the outer one already mentioned. The inner area was divided by yet another rampart into two enclosures the inner one being a sanctuary for women and other non-combatants, while the outer one was occupied by fighting men only.

At two corners were situated the two entrances to the *pa,* termed *wahangutu* and *kuwaha* in the narrative, each of which was protected by an overhead platform (*puhara*), occupied by armed men during an attack. What is apparently an extra defence, or ravelin, extending outward from each gateway in the form of a

appears in a native sketch of the defences, but is not explained. In this fort the *waharoa* or long narrow entrance passage, was represented by the 6 ft. passage between the two ramparts.

Any hostile party forcing an entrance would be compelled to advance along the narrow 6 ft. passage between the two ramparts to the single entrance of the second rampart which entrance was an underground passage below the rampart, a form of entrance easily defended. The entrance through the third rampart was also an underground one. This passage gave access to a narrow space, enclosed by a short rampart, from which a third underground passage led to the inner area.

The elevated platforms projected in such a manner that their occupants could observe all faces of the outer defences and detect any attempt to destroy the outer rampart by digging operations.

It will thus be seen that, apart from the unexplained outer defences, any attacking force, in order to take the fort, must force the entrance, run the gauntlet of many energetic defenders along the narrow passage, and force the underground passages, during which progress the defenders would be assailing them from points of vantage for the whole distance.

This traditionary account is of interest on account of its distinct statement that defenders occupied the tops of the ramparts during an attack:—"Ko nga parepare katoa o roto mai i to waho, kaore he awakari; e rua whanganga te tiketike ake i te papa o te pa nei, e rua a runga, haere tonu ai nga tangata i runga, ara nga toa. Ko nga parepare o waho kotahi te whanganga te matara o tetahi i tetahi. I peratia ai mo te uru te taua ki roto, kaore e tika tona wero i tona tokotoko, huata ranei, i te apiapi o aua parepare, a kei runga ra hoki nga toa i te parepare e haereere ana, e werowero ana i nga tangata e uru ana mai, ina uru ki roto i taua pa." (All the ramparts within the outer one had no accompanying fosse. They were two fathoms in

height above the ground level of the *pa,* and two wide on top, persons, that is warriors, standing right on top. The outer ramparts were one fathom apart. This arrangement was in case a hostile party made entrance; they could not effectually wield their spears on account of the confined space between the ramparts, also the warriors were moving about on top of the ramparts thrusting at persons entering, when such entrance was effected.)

The width given for the outer fosse, *viz.,* four fathoms, is excessive, few of these moats were so wide. The height of the rampart, three fathoms, would include the depth of the moat. The width of two fathoms would, presumably be that of the base of the rampart, not that of its summit. There was no necessity to make a rampart two fathoms wide across the top. A width of 6 ft. would be ample as a position for defenders.

In the district commonly known as the East Coast we find tribes that appear to be descended principally from the old time Toi folk. Among these tribes is one known as Te Wahine-iti, the people of which are partially descended from the crew of a vessel that reached that coast from the isles of Polynesia long centuries ago. The principal person of that vessel was one Hine-rakai, who had been ranging far seas in search of her brother, Tu Te Amokura. He had been swept away from his homeland by a storm and his sister organised an expedition for the purpose of seeking him, in the hope that his vessel had weathered the storm.

Now up to about five hundred years ago these Wahine-iti folk dwelt in the Waiapu valley, and a number of their old hill forts were pointed out to me when I visited that district in 1923. On the hill spurs at Wai-o-Matatini the earthworks of four *pa* are seen, namely Kopu-te-rehe, Puputa, Papa-hikurangi and Kokere-taniwha. Of these the two latter were strongholds of the Wahine-iti folk during long past generations, and were not occupied by the later coming Ngati-Porou.

These old positions are of interest to one studying the *pa maori* (native forts), and here, as in some other places, we note that the oldest fortified places are of simpler plan and construction than most of the more modern places. There is a marked absence of ramparts and fosses, and the defences must have consisted principally of stockades, occasionally supplemented by scarps. They may be compared to the positions at Heipipi and Otatara, described elsewhere, and they lack the continuous, prominent terraces of the North Auckland series. Small linchets are seen that could only have accommodated a single hut. The Kokere-taniwha *pa* extends up a spur and includes the top of the ridge. Some old pits for food storage seem to show that the *kumara* was cultivated here in those far off days, but no sign is visible of any rampart or trench, nought save a few much eroded and small escarpments.

The Papa-hikurangi *pa* occupies a smaller and lower spur near Kokere-taniwha, and does not extend up to the summit of the ridge, hence it was necessary to form a strong barrier at the upper end of the position. See Fig. **76**, p. 220. Advantage was taken of a dip or saddle in the spur, and this hollow was excavated so as to form a huge fosse. The upper side of this trench was formed with a long, easy slope so as to give an attacking force no point of vantage, but its down-spur side was carved into a steep, defensive scarp that is even now some sixteen feet in height, this after the erosion of centuries. All other faces of the position must have been defended by stockades. Hut sites and store pits are in evidence, and a small stone implement fashioned from the form of chert known as *matā waiapu* was found embedded in an eroded face.

The Kopu-te-rehe *pa* near by is similar to Papa-hikurangi, and the huge trench at its upper end is of about the same depth. A small lateral gully has been scarped on the *pa* side, while the terraced areas for huts are larger and more pronounced than those of Kokere-taniwha.

No remarkable fortified positions were seen in the Waiapu district, and apparently there were no such extensive and picturesque places such as obtained in the North Auckland region, nor were fosses and ramparts employed as they were in the Taranaki and Bay of Plenty districts.

FIG. 76.—THE PAPA-HIKURANGI PA AT WAIAPU.
See p. 219. [*J. McDonald, Photo.*

Mangere.

The old time *pa* known to us as Mangere is situated on a volcanic hill near Onehunga. This has been another of the highly picturesque fortified hills of which so many have been occupied around Auckland city. It does seem strange that none of these interesting places have ever been described.

Mangere is another of the many long extinct volcanoes of this district and is noted for having a double crater. The large crater contains an interior cone with a smaller crater. As in the cases of other local forts described, no signs of fosse and rampart defences are seen save a few short trenches formed across the rim of the crater. As in the cases of Mt. Eden and One Tree Hill the slopes of hill, ridge and crater have been simply terraced for occupation. Earthwork defences such as fosse and rampart, are almost non-existent. All terrace formations are much eroded and by no means so well preserved as those of Mt. Eden and One Tree. The terraces are mostly short, and irregular in size and arrangement, probably on account of the numerous outcrops of rock. Many are only large enough to contain one hut, reminding us of kindred places at Wellington, such as that on the hill above Tarakena. There are a few small terraces within the craters, and the summit of the containing ridge has been flattened wherever practicable; all used as hut sites. Store pits of the *rua tahuhu* or semi-subterranean type are fairly numerous, some on terraces but mostly on ridge tops. The largest seen measured 27 ft. by 18 ft. and is now 6 ft. deep, but contains much debris. No store pits of the well-like type were seen. Many small shell middens were noted, the bulk of the shells being small, and the species apparently a form of *Chione*.

From the highest part of the hill on the western side of the crater, where two short trenches cross the narrow ridge, a sunk way extends down the western side of the hill to the flat below. Presumably this was either an old entrance passage or a protected way to the water supply. In this light porous land streams are rare, but fresh water breaks out at or just above high water mark; this seepage water must have been the water supply of the inhabitants of Mangere. The flats around the hill were utilised as cultivation grounds, and here formerly were seen many pits from which sand or gravel was obtained for the 'top dressing' common to *kumara* cultivation.

This *pa* was said by old Patara Te Tuhi to have been occupied by 3,000 natives in pre-European days. This was probably a mere guess, as the Maori did not value or preserve such information; certainly it would accommodate a large number of people.

Any observer of antiquities coming from Taranaki or the Bay of Plenty to the Auckland district would be much struck by the lack of earthwork defences in this fort.

There are many other volcanic cone forts in the vicinity showing interesting works of former times. The following are worthy of note:—

Mt. Wellington, lies about N.E. from One Tree Hill.
Mt. Smart, lies about E. from One Tree Hill.
Mt. Hobson, lies about N.W. by N. from One Tree Hill.
Mt. St. John, lies about N.W. by W. from One Tree Hill; a little west.
Mt. Eden, lies about N.W. from One Tree Hill.
Mt. Albert, lies about W. from One Tree Hill.
Three Kings, lies about S.W. by W. from One Tree Hill.
Mangere, lies about S.E. by S. from One Tree Hill.

The Mangere *pa* resembles Otatara and Heipipi in its lack of earthwork defences, and its small terraces; it may be viewed as a connecting link between those places and the imposing terraced hills of the Mt. Eden type.

Pouerua.

This is one of the most picturesque of the volcanic cone *pa* of the far north, and is but a short distance from the hamlet of Pa-karaka, inland of the Bay of Islands. The fine shapely

cone of Pouerua is about 650 ft. in height, its crater being about 500 ft. deep, and the low lip thereof, on the south side, about 250 ft. below the level of the high part of the crater rim. This rim is in the form of a horseshoe, the open part representing the low lip of the crater. From the two ends of the horseshoe extend two spurs, both of which fall somewhat abruptly. From the crater lip down the deep gully between the two spurs flowed, in remote times, the lava stream that is seen spread fan-wise over the low lands. From other sides this extinct volcano presents the appearance of a symmetrical cone, its slopes grass covered and carved into many terraces. The greater number of terraces are on the eastern and northern sides, with but few on the west. The Maori ever appreciated the morning sun. All these terraces were residential, and on some of them are yet seen the stone fireplaces of former huts.

This famed hill fort must have accommodated a vast number of natives, and many were living there when Archdeacon Williams first acquired land in the vicinity of the old lava flow. Henry Williams remembered seeing 1,400 natives living on the eastern slope alone of Pouerua, but at some time in the past a very much greater number must have occupied this hill.

The terrace formations of Pouerua resemble closely those of Maunga-turoto to the westward, and of the fortified volcanic hills of the Auckland isthmus. Although the fine, even slopes were eminently fitted for the formation of long continuous terraces, yet we here see the same short formations irregularly arranged that are observed at the above mentioned places. Even those terraces that, from a distance, appear to be of considerable length, are not really continuous, but include abrupt changes in level, all of which breaks in level lent themselves to defence. To make a sketch plan of all these terraces would be a most interesting task, but would consume much time, hence it was necessary to confine the illustration to that of the rim of the crater. The whole of the rim was occupied except the low lip and the steep slopes thereto, and this rim is the only part showing defensive fosses. There are also some terraces within the crater, on the upper slopes, but the lower part of the crater shows a dense growth of bush. There is said to have been a spring of water in the bottom of the crater which may have been the water supply, or one of them. No such spring is now seen, though the ground is damp and possibly water may collect there in the winter. The accumulation of debris from the extremely steep slopes may have covered or masked the spring.

My crude sketch of the crater rim lacks much detail and illustration of flank terraces, but will give some idea of the way in which such formations were excavated into flat residential areas of various dimensions, and the defence thereof. See Fig. **77**, p. 223. Area X is the highest part of the rim, from which it falls gradually toward the north to K area, then rises again to area A.

In most cases the modes of communication between the irregular, disconnected terraces are not traceable, but occasionally one terrace rises or falls to connect with another. The smallest terrace noted was about 20 ft. long and 10 ft. wide. In all cases abrasion of the brow lines and deposits of detritus on the inner sides have reduced the width of terraces. In one place was observed a small terrace having its outer scarp faced with stones. The defences consisted principally of scarps surmounted by stockades.

Ascending the steep tail spur of the western horn of the crater we reach the end of the crater rim at I. Here we meet with the first line of defence in the form of a trench cut across the ridge. Its inner scarp is 5 ft. in height and the trench is much blocked with debris therefrom. This trench extends down the western slope of the ridge to the end of a terrace 8 ft. below the level of A area. B is a small flatted area, as also is C, at the north end of which is a trench 6 ft. wide but now only 2 ft. deep, the inner or northern scarp is 6 ft. Scarps of the summit area are much eroded, it being so exposed to all winds, rains and storms.

D is another artificially flattened area of the crater rim 40 yds. long and from 7 yds. to 15 yds. wide. The N. and S. ends show remains of parapets now 1 ft. to 3 ft. high, as also do the two sides. The square block at the south end is apparently a portion of the original formation; it is 7 yds. long, 5 yds. wide and 5 ft. high, possibly connected with defensive

measures, for example it might supply the place of an elevated platform, so often used in the defence of a gateway. The scarp on the eastern or crater side is from 5 ft. to 10 ft. deep, that on the outer or western side is 10 ft. to 12 ft., below which is a terrace 12 ft. wide. Other terraces are noted lower down this outer side.

From D area the crest of the crater rim falls toward the north, and then, as it curves round to the east, rises again toward the eastern horn which is the highest part of the rim. E area narrows as we proceed and ends with a 4 ft. scarp. The nearest terrace on the western slope is now about 50 ft. down the hillside.

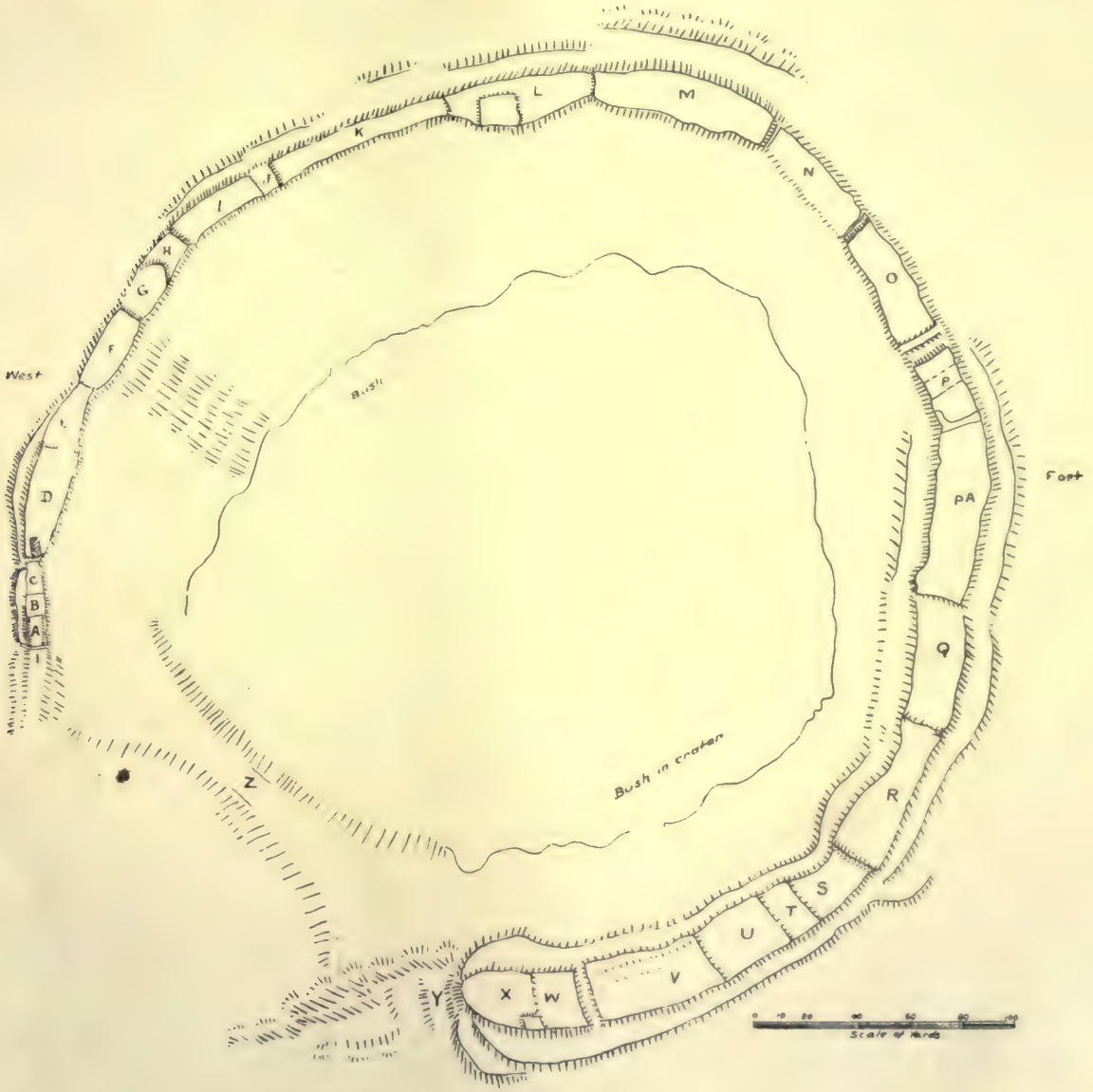


FIG. 77.—POUERUA CRATER PA, TAIAMAI DISTRICT, NORTH AUCKLAND.

See p. 221. [*Miss E. Richardson.*

F is another flatted area, 30 yds. long and 7 yds. to 12 yds. in width. Another 4 ft. drop lands us on G area and yet another such on H area. I area is 24 yds. long and averages about 9 yds. wide. On its western slope is a narrow terrace 4 ft. below the upper area. J is a small flatted area 8 yds. square. Several terraces down the western slope.

A drop of 3 ft. brings us to K area of which the first 22 yds. are flattened, then a descent of 30 yds. brings us to a saddle, from which we advance 20 yds. on an upward slope to L area 58 yds. long. The square shown in it is a block of the original formation 7 ft. higher than the excavated part; it is 14 yds. by 11 yds.

Area M is 73 yds. long with steep slopes on both sides, the uppermost terrace on the outer slope being about 40 ft. below the summit. Descending a 10 ft. scarp with a shallow trench at its base we find N to be a flattened area 13 yds. wide. At 24 yds. it begins to rise and lifts 12 ft. in 21 yds. showing a store pit in the middle. The terraces on the outer slope are numerous and extend far down the hillside.

Ascending a 6 ft. scarp, at the base of which is a much filled trench, brings us to O area, 48 yds. long, and its greatest width about 16 yds. At the end of this area is a block of the original formation 4 ft. higher than the flattened area, and 12 ft. wide. Then comes a fosse 12 ft. wide and 4 ft. deep.

Area P is divided into three sub-areas, two level and one sloping, and here is seen a curious wall of earth as left by the excavators when levelling the ridge top. It is bounded by a trench and scarp at its southern end, the trench extending down the hillside, at a depth of 5 ft. across a terrace 16 ft. below, and on further to lower terraces.

Area P, A is 70 yds. long and has been excavated in four different levels. Here are noted small sunk fireplaces termed *takuahi,* formerly used in dwelling huts, each lined with four stones. They vary in size from 8 in. by 10 in. to 16 in. by 18 in. inside measurement.

We now descend a 14 ft. scarp to a levelled area 45 yds. long and 19 yds. wide; Q area. Then comes a wall of the original formation, then a trench 4 ft. deep.

R area is 58 yds. long and from 8 yds. to 22 yds. wide. At its southern end one rises a scarp of 8 ft. the upper part of which is a parapet, to S area, 28 yds. long, and averaging 10 ft. above R. Another rise of 10 ft. to T area 12 yds. long, and another of 5 ft. to U area, 28 yds. long. Fine terraces on both flanks 10 ft. to 16 ft. below the ridge top. Another 10 ft. scarp takes us up to V area 47 yds. long; its western side being in three levels. Its southern end shows a fosse 10 ft. wide and a scarp of 12 ft. which carries us up to W, a small area 15 yds. long and 21 yds. wide.

X area is 6 ft. higher than W and is the highest part of the whole crater rim. It is also the last area of the fortified part of the rim and from this eastern horn the ground falls steeply to the lowest part of the lip at Z, about 250 ft. below, to rise again to the western cusp of the rim. X area ends in a deep scarped face, below which have been a few residential terraces, and a spur from the X cusp here falls steeply southward to rise again into a hill some distance away, that hill being also a fortified position. X area is 27 yds. long and in one corner has a rectangular sub-area 3 ft. higher, left in the levelling process. The outer slope shows a fine terrace up to 40 ft. in width, below which are many others on the long slope down to the lowlands. On the inner slope is a similar fine terrace. The scarp defences of X area are 18 ft. to 24 ft. in height. The two wing spurs or ridges extending out from the two cusps at A and Y seem to have confined the flow of lava that poured over the low crater lip at Z and to have prevented its distribution until it escaped from the containing ridges.

The eastern outer slope of Pouerua shows about a dozen terrace formations, one above the other, but in no case is a terrace of any considerable length. The levels frequently change, as in the case of the hill forts of the Auckland district. A number of storage pits of the semi-subterranean type are seen.

On a hill top N.E. by E. from Pouerua is a picturesque old fort known as Nga Huha; it presents some imposingly high scarps as seen from the road. To the S.W. by W. rises the fortified volcanic cone of Maunga-turoto, westward is Maunga-kawakawa, while further round to the north are Tapa-huarau, Te Rua-hoanga, and many other old time fortified hill villages.

The view from the summit of Pouerua cone is indeed a magnificent one and well repays the labour of ascent, which is conveniently made from Pa-karaka.

Wilkes, of the U.S. Exploring Expedition, writing in 1840, remarked of Pouerua:—"It is remarkable for the regular feature of its cone when seen from the eastward. Its western side is cut through by a deep gorge. The interior is covered with large forest trees and huge blocks of lava, while the exterior is clad in ferns of low growth. The diameter of the crater is about half a mile." This estimate of the diameter of the crater is much exaggerated.

Maunga-turoto.

This fortified volcanic cone is situated near Ohaeawai, Bay of Islands district, and much resembles that of Pouerua, a few miles distant. Both are remarkably picturesque hills, symmetrical, grass-clad, truncated cones as viewed from the plain, and, when occupied, must have presented a most interesting appearance. Sad to relate not one of the early writers who saw such places when occupied by natives has left us any adequate description of them. Early missionaries, traders and travellers are all disappointing in their meagre accounts of strange sights that they must have seen.

On the northern slopes of Maunga-turoto the stones have been collected in early native times and piled in heaps or stacked in the form of rough walls, in order to clear the ground for cultivation purposes. One such wall is 200 yds. in length and roughly laid about 3 ft. high, unlike the well built symmetrical walls 5 ft. and more in height erected by the European settlers. At one place a hut site is partly surrounded by a low stone wall 2 ft. high.

A small round hillock 10 chns. north of the cone has been occupied as a *pa* apparently. The slopes show terrace formations the scarps of which have in places been faced or built up with stones. These stone faces are from 2 ft. to 7 ft. high and there is much more of such work here than at Mawe. On its N.W. side is a terrace with such stone work 28 yds. long, rough blocks of scoria up to 2 ft. in diameter piled up loosely to retain the earth; width of terrace seven yards.

The cone of Maunga-turoto has its slopes terraced in a similar manner to those of Pouerua and the volcanic cones of the Auckland Isthmus. Terraces are very numerous but their levels are much broken; the longest seen was 75 yds. in length and 22 ft. wide. This terrace shows two trenches across it, 5 ft. to 8 ft. wide, and 8 yds apart, near the centre of the terrace. These may have been for defensive purposes.

The crater of this cone is much less deep than that of Pouerua, it is shallow and flat bottomed; being much filled with debris. See Fig. **78**, p. 226. The low lip of the crater rim is on the south side, and from the centre of the crater floor to the lip is a distance of 85 yds., with a rise of only about 16 ft. The other parts of the rim are considerably higher. As at Pouerua there are no signs of native occupation about the lip, but the higher parts of the rim have been flattened by excavation for occupation, and average 35 ft. to 40 ft. in width. The division of this flatted rim into areas of varying size, defended with scarps and trenches, closely resembles that of the summit of Pouerua, though on a smaller scale, for this one has a much smaller circumference. As at Pouerua there are a large number of terraces on the external slopes on the north and east sides, less on the west and none on the south side. These terraces are from 18 ft. to 30 ft. in width, as a rule, but some are 40 ft. and 45 ft. wide. In length they run from 30yds. to 50 yds.; a few are shorter or longer. There are a few trees in the crater and a fine growth on the eastern slope of the hill, while a few *puriri* trees flourish on the western slope, one of which is fully 5 ft. in diameter; one shelters a hive of bees that have been located here for some years.

A growth of Australian wattle trees on the northern slope tends to show that this place has been occupied since the arrival of Europeans. The *karaka* and *taraire* also flourish on the hill.

The fortified part of the crater rim of this cone is its highlying part. The highest part of the rim is on the eastern side, the low lip on the south side. In all these peculiarities it resembles its neighbour Pouerua to the eastward, but it is much smaller, being only about 600 yds. round the crater rim.

The figure 1 shows the low lip of the crater, from which the rim rises about 23 ft. to 3, with no sign of occupation except a small terrace at 2 on the interior slope. At 3 we reach the high-lying part of the rim and the first fortified line across it in the form of a shallow trench (debris filled) 6 ft. wide and 14 yds. long. On its inner or northern side rises a steep scarp of 10 ft., its upper part being the face of a parapet or superimposed wall 3½ ft. high. From the eastern end of the trench a terrace runs round under the eastern scarp of A area as shown on the plan. This is a formation not infrequent in Maori fortification, *viz.*, the continuation of a fosse excavation in the form of a terrace along the flank of a fortified area; the terrace merges into the fosse at the same level.

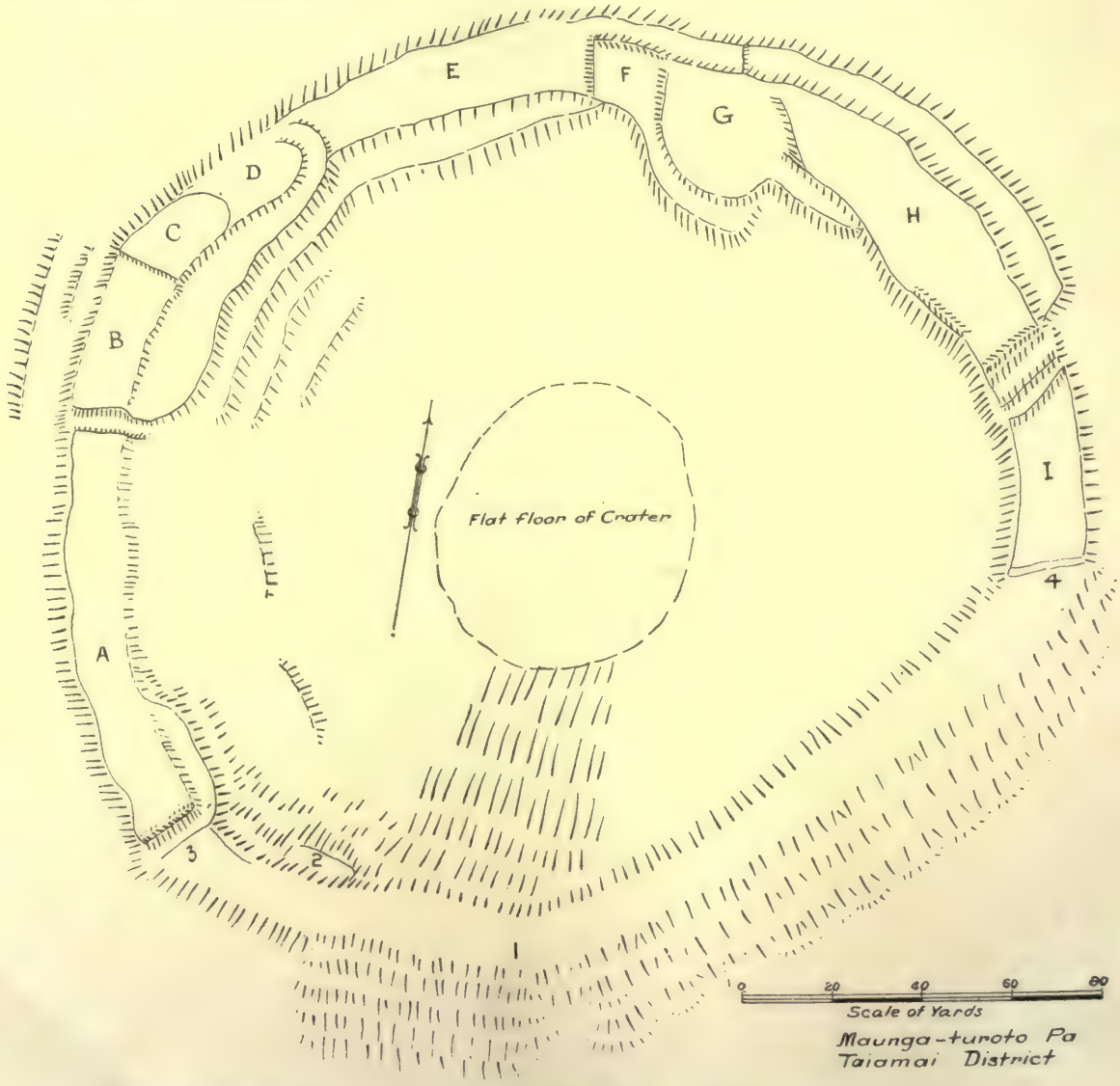


FIG. 78.—MAUNGA-TUROTO... AN OLD HILL FORT NEAR OHAEAWAI, TAIAMAI DISTRICT.
See p. 225. [*Miss E. Richardson.*

The outer or western side of A area presents a much eroded scarp of 7 ft. below which is a steep fall to a flat several hundred feet below. Exterior terraces do not extend so far south. This area is 91 yds. long and averages 12 yds. in width; its northern end being 6 ft. lower than it southern end, though the whole has been levelled for occupation. At its northern end the

exterior system of terraces commences, to construct a plan of which would occupy much more time than the writer had at his disposal. In some places the flank scarps have become obliterated, the soil being of a loose rubbly nature. Such defences must have been supplemented by stout palisading. Some short terraces and levelled hut sites are noted on the interior slopes.

The northern end of A area is marked by a fosse 8ft. wide and 1 ft. to 4 ft. in depth, much clogged with detritus; it is continued a little way down the interior slope. Its northern side presents a scarped face 6 ft. to 7 ft. high in which a storage pit has been excavated; the pit is circular in form and in it are lying the iron blades of three European spades, probably rendered *tapu* in the digging of a grave near by. It may be here remarked that many of the old *pa,* long deserted, have been utilised by natives in late times as burial grounds.

B area is at a higher level than the northern end of A and is 31 yds. long; its main part is 14 yds. wide. On its eastern side, at a level 4 ft. lower, another flatted area extends forward under B, C and D areas. The exterior slope now shows six different terraces.

C area is 6 ft. higher than B and 21 yds. long; it is the highest part of the western rim. Its exterior slope shows terraces far below, and others on the interior slope, as shown on the plan.

D area is 8 ft. below the level of C, another levelled expanse 19 yds. long and 14 yds. wide. The eastern terrace from B runs out at the northern end of D, but the lower terrace extends further along under E area.

From D we descend 3 ft. to E area which averages 15 yds. in width. The first 27 yds. of its length represents a level area; it then rises 10 ft. in 31 yds. to a small level area from which a terrace runs round the outer side of F area. This terrace changes its level at one place by a sudden drop of 3 ft. A number of other terraces on the slope below it. The terrace on the inner slope ends at F.

The ascent of a 6 ft. scarp lands us on F area, 15 yds. long, a level terrace that is continued in narrowed form round the inner flank of G area. The outer brow of F shows a parapet now 2 ft. in height.

The ascent of an 8 ft. scarp brings us to G area. There seems to have been a sloping path up from F to G at the northern end of this scarp. This area is 29 yds. long and the widest one of the series, 25 yds. On these terraces are observed the small stone lined fireplaces formerly used in dwelling huts. A tongue of this terrace extends along the face of H area for some distance.

The eastern end of G area shows a trench and scarped wall of 8ft. crossing the rim area diagonally. This H is the highest area of the *pa,* and also the last strongly fortified one. It is 71 yds. long and 12 yds. wide, the S.E. end is at a lower level by 3 ft. than the rest of the area. The scarp brow at this end carries a parapet now 2 ft. to 4 ft. high, and remnants of a parapet are seen on the S.W. or inner side. A store pit here has still a remnant of fence round it. The outer side has a scarp of 16 ft. at the base of which the uppermost terrace is 20 ft. wide. There are other fine terraces below it. The south western scarp has apparently been from 10 ft. to 12 ft. high, but much abrasion of the friable material has taken place. The scarped face at the S.E. or outer end of H area is a steep 13 ft. drop, still almost vertical, and at its base is a trench yet 5 ft. deep and 8 ft. wide; length 16 yds. Outside this is a kind of low rampart 3½ ft. high and 10 ft. wide in the middle, then comes the levelled I area 34 yds. long, that was probably a palisaded residential area, to be evacuated in case of a serious attack. On the exterior slope below these final areas light bush still flourishes. The S. end of I area is marked by a trench 3 ft. in depth, eastern side scarped but inner side apparently retaining the original slope. This is the last sign of defences and occupation on the rim, and from the trench at 4 one descends about 40 ft. in 127 yds. to the low lip we started from.

It would be interesting to know if the unscarped and unoccupied lip or low part of the rim was closed by a stockade. If not, then apparently a numerous enemy force could enter the crater by passing through the open part of the horseshoe like fortified rim and so attack the

fortified rim from within. The part of the rim occupied in former times begins at 3 and ends at 4. E area is about 50 ft. above the level of the floor of the crater.

In descending the exterior slope of the cone in a N.N.E. direction from the N.W. end of H area one encounters a succession of terraces of fine aspect eleven in number. Though erosion has taken place to some extent, yet these terraces are still from 16 ft. to 30 ft. in width. Up through these terraces from the north the old entrance passage is still discernible; it was probably a lane flanked on both sides by stockades. Nearly all terraces break level at this passage, the directness of which is not continued through the two uppermost terraces, where, in order to gain the summit or rim area, persons had to pass along a terrace to right or left to seek entrance.

The low lands north of the cone have been occupied, as shown by hut sites; they have also been under cultivation, as betokened by heaps and rows of stones.

These fortified volcanic cones must have been picturesque places when occupied, when the many lines of defensive stockades on the outer edges of the many terraces rose one above another to the summit. The plans given merely show the defensive scarps and trenches of the rim line of the crater, together with the terraces and linchets formed by excavation on such rims to serve as residential areas. Rows of huts would also occupy all terraces on the exterior and interior slopes. I regret being unable to give a complete plan of one of these hill forts, showing all the many terraces, but the taking of so many measurements called for more time than I had at my disposal.

The *pa* known as Te Rua-hoanga, situated on Mr. Ludbrook's property, just east of Ohaeawai township, is not so picturesque an example of native fortification as are many others in the district. Its most noticeable feature is a scarp that is about 20 ft. in height. This place appears to have been occupied in the 'twenties' of last century by the chief Te Morenga and his people. A number of stone lined fireplaces are seen on the terraces.

Another old *pa*, known as Ngaungau, not far from Tapa-huarau, is said to have been occupied at one time by a portion of the Ngati-Kura clan under Kawhi. A part of the same clan, under a chief named Tui, held the Kaiaia *pa*, near Taka-poruruku. The latter, as also Tapa-huarau and Nga Puke-pango belonged to the Ngati-Pou clan, Te Rua-hoanga to Ngati-Rangi, and Te Tou-o-Roro *pa* to Ngati-Hineira. All these clans are sub-divisions of the Ngapuhi tribe.

At one of these fortified places was found an old fashioned vinegarette with a much worn design on its silver covering.

One Tree Hill.

This is one of the isolated volcanic cones of which so many are seen on the Auckland Isthmus. Its slopes, spurs, peaks, and the interior of the crater have all been carved into residential terraces sufficient to accommodate thousands of people. These terraces are not continuous for any great distance even under the most favourable circumstances, and some are very short, providing accommodation for but a few huts. On the gentle slopes of the southern spur is a most interesting series of excavated terrace-like areas, none of which are extensive, and are divided from each other by scarps or parapets. Here can be traced an old entrance passage which, in a distance of about 80 yards, passes through eight different levels, that is to say through eight different terrace like areas. This merely brings it to a levelled area on the top of the flank spur; it can be traced yet further up toward the crater.

As in all other examples of these volcanic cone forts in this district, as also those of the Taiamai district, the observer is struck by the great rarity of defensive works in the form of ramparts, parapets and fosses. The folk who dwelt in these hill forts evidently depended upon two main features as defensive works, scarps and stockades. The frontal defences consisted of steep scarps, surmounted by stockades, and the lateral defences were formed by breaking the level of the terraces so as to present a steep scarp which, when supplemented by a stockade, would be highly capable of defence. In some cases, when

a terrace was being excavated, a portion of the material was left standing as a wall or rampart. The rampart and fosse defence that is so marked a feature of native forts in most districts, is almost non-existent here, and is seen only in very short forms crossing the rim of the crater.

On the steep sidelings alone are seen high scarps; on the lower and more gentle slopes the terrace scarps are from 3 feet to 9 feet in height, usually about 5 feet or 6 feet.

It is a specially noticeable fact that even on slopes where terraces might have been carried at the same level for a considerable distance, no attempt has been made to do so; the level of such formations has been purposely broken. Assuredly this was for the purposes of defence. Thus, should an enemy gain access to a terrace he could not proceed along it far in either direction without encountering a flank defence of scarp and stockade. For example, the lowest terrace in the amphitheatre like gorge on the S.W. side of the *pa* shows six different levels, or consists of six different terraces situated at different levels. At one place the former mode of passing from one level to another seems clearly to have been a sunk way or trench at the base of the inner scarp and sloping upwards to the higher level. Probably the palisading along the brow of the cross scarp was continued on over this sunk way so that a person passed beneath when entering the upper area; thus could the passage be easily defended.

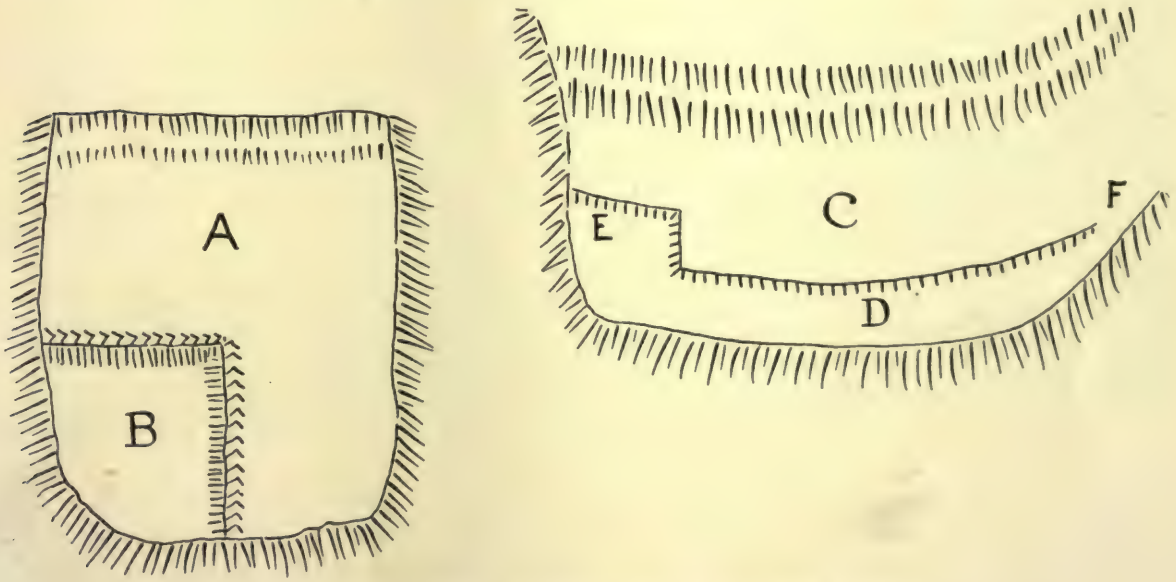


FIG. 79.—DOUBLE TERRACE FORMATIONS ON ONE TREE HILL, AUCKLAND.
How labour was economised by excavators.

At one place were noted two terraces on almost the same level divided by a transverse fosse and parapet. At several other places terraces are divided or crossed by such ramparts or earthwork walls with no accompanying fosse. Such ramparts are considerably abraded and now show a height of from 3 feet to 4 feet. These walls were formed (or left during excavation) at places where the break in the terrace level was not sufficient to produce a scarp fit for defensive purposes; such parapets were equivalent to raising the height of the scarp. These short ramparts and the four short ones across the crater rim are the only ones seen in the whole of the area occupied. There is absolutely no sign of circumvallation in these volcanic cone forts. In this peculiarity they resemble those of Heipipi and Otatara, but in the latter two the terraces are insignificant in size; as a rule only big enough to contain one or two huts.

A peculiar feature of this *pa* is the way in which small sub-areas are scalloped out of larger ones. See Fig. **79**, p. 229. Thus, in the accompanying diagram, A is a terrace excavated out of a spur slope, while B is a sub-area excavated out of the outer corner of A and 4 feet below its level. On the top of the scarps of the two inner sides of B. are parapets now degraded to a height of from 1 foot to 3 feet.

Just below this terrace is the one marked C, out of the periphery of which has been excavated the terrace D, which is 6 feet below the level of the former at E and gradually rises to join it at F. These singular forms presumably came into being owing to peculiarities in the contour of the spur; they saved labour.

In a number of places the old entrance ways to terraces are still traceable. In one rounded basin like gully S.E. of the crater a path seems to run straight up the hill side through a series of terraces. This, however, was not a common Maori usage; what makes it appear to be of old date is the fact that the levels of the terraces change on either side of the path or passage.

There are three *tihi* or summits of this *pa*, the main height on the eastern side of the crater, and two of lesser altitude on the western side. The view from the main peak is one that can scarcely be excelled on the island; it has been termed the finest in New Zealand.

Within the area of this great fort are hundreds of terraces and escarpments, the depicting of which would mean the expenditure of much time and a vast series of measurements.

A great number of the semi-subterranean type of pit stores is seen throughout the area formerly occupied. The more shallow depressions seen were probably the sites of *whare puni* (dwelling houses) but the deep pits were certainly storage places, store pits for food products. Hochstetter's statements concerning pit traps and pit residences cannot be accepted.

Shell refuse is seen in all parts, showing that all these very numerous terraces were occupied. On the sloping ground to the S.W. is an extensive burial cave where the bones of the dead were disposed of in pre-European times; the entrance to it is now closed.

The ground is very porous and the water supply of this fort is by no means clear. Water may have been obtained by sinking on the low lands adjacent to the hill, or possibly in one of the subterranean lava flow passages (technically lava-tunnels) that abound in this district.

Mount Eden.

Maunga-whau or Mt. Eden is one of the best examples of the interesting hill forts of the Auckland district, and a good illustration of that type of hill fortifications in which fosse and parapet are almost entirely lacking. Casual observers have written of trenches and earthen walls that do not and never have existed in these volcanic cone strongholds of the isthmus area. Their very numerous lines of defence consisted almost entirely of steeply scarped faces supplemented by lines of stockades.

The crater rim of Mt. Eden is about 500 yards in circumference, and the lip or lowest part of such rim is on the N.W. side. The S. and S.E. sides are the highest. The crater is in the usual form of an inverted cone; it is about 55 feet deep as measuring from the low lip, but from the S.E. side it is about 110 feet deep. The bottom shows a collection of debris composed of blocks, boulders and small pieces of scoria. The interior slopes have several terraces from 30 yards to 80 yards in length on the eastern side, and one on the upper part of the western side. All terrace formations were undoubtedly residential areas. The terraces vary much in size. Some are small, while others are as much as 45 yards in width, and scarped faces of 40 feet are seen. A great number of the rectangular semi-subterranean storage pits are seen, but none of the well-like wholly subterranean pits. Presumably the soil is not suitable for the latter type. One pit measured is of huge size, being 14 yards by 13 yards, and 7 feet deep, with much debris in it. Another is 40 feet long, 30 feet wide and 10 feet deep. Yet another near by is almost as large.

FIG. 80.—MT. EDEN AT AUCKLAND, AN OLD HILL FORT.
View of western part of crater rim showing levelled areas.
See p. 232.

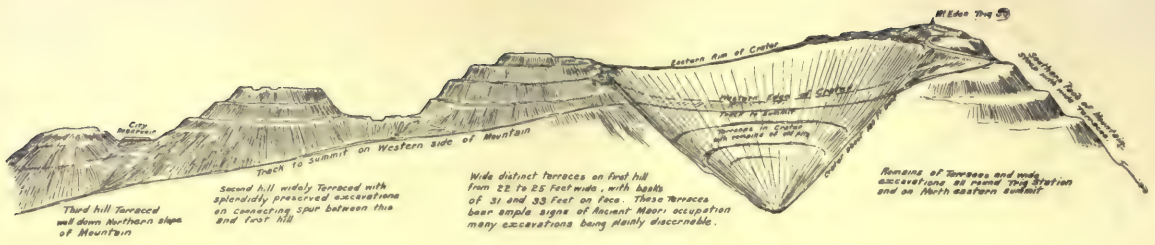


FIG. 81.—MT. EDEN, SHOWING CRATER AND TERRACE FORMATIONS.
[*A. H. Messenger.*

In Fig. **81** above is shown the summit of the hill, as also the crater and several terraced formations on a flank spur. Fig. **83**, p. 233, gives the view looking northward from the summit, and Fig. **82** below a view of the summit area from the flank spur. Fig. **80**, p. 231, from a photograph, shows a part of the summit area.

In writing of Mt. Eden, Dieffenbach says:—"On the outer surface of the hill about twelve terraces rise throughout its extent, at regular intervals of about twelve feet. All the cones in the neighbourhood of Maunga-whau have this terraced appearance; and although the natives, who formerly had settlements on almost all these hills, have contributed much to this regular appearance by levelling the steps, they are evidently in their origin the work of Nature."

FIG. 82.—TERRACE FORMATION, MT. EDEN.
[*A. H. Messenger.*

Here Dieffenbach was in error; the terraces are entirely artificial in their origin, all formed by the natives in past times. The intervals of twelve feet is too low an estimate; the scarps are much higher.

Regarding the old workings seen at Mt. Eden Mr. Messenger remarks:—"Practically the whole mount, from base to summit, has at one period been under close occupation, and on its lower slopes the deep volcanic soil must have proved admirable for cultivation purposes. Looking down on the broad, level terraces that in some cases almost encircle the

FIG. 88.—MT. EDEN, LOOKING NORTHWARD FROM SUMMIT.

upper slopes of the mountain, one is filled with admiration at the immense labour involved in their formation, especially with the primitive implements at the disposal of the natives. When fully occupied, with each one of the innumerable terraces protected by stockades, the mount must have presented the appearance of a vast stronghold.....It seems almost incredible that, of all the thousands who visit Mt. Eden to view the magnificent pano-

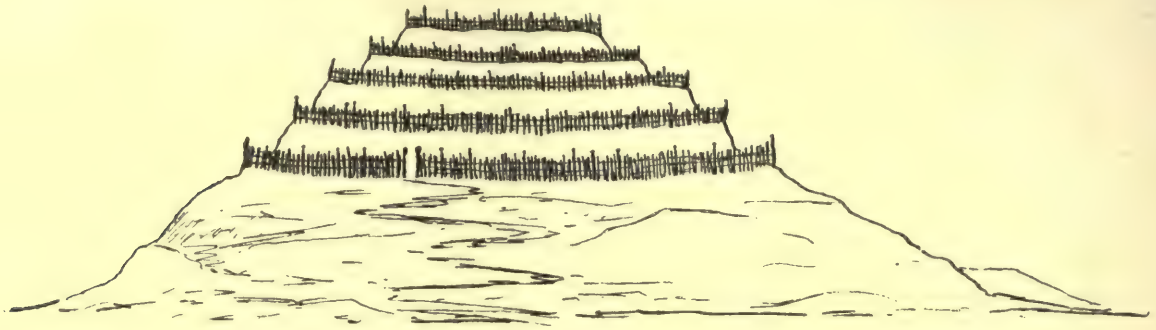


FIG. 84.—THE OLD STOCKADED HILL FORTS MUST HAVE PRESENTED SUCH AN APPEARANCE AS THIS.

rama that stretches to every point of the compass, only a very few display even the slightest interest in all these astonishing remains of the old-time inhabitants. Most people seem to accept the broad, level hill summits and wide terraces as quite a natural formation..... The deep excavations shown in the drawings are from 12 to 16 feet deep and 47 feet long on the surface. Other excavations are circular in shape and 6 feet deep, with a circumference of about 40 feet."

NGA PUKE-PANGO AT OHAEAWAI.

This hill fort is a very interesting and picturesque specimen of Maori fortification; a model of it would be an excellent illustration of a terraced hill *pa*. A spur offshoot from a higher ridge to the north descends to a low saddle, then rises to form a rounded hill from which three other spur struts fall rapidly to the flats to the west, south and east. Thus the hill and its attendant spurs resemble a cross or four-rayed star. The hill itself has been carved into many terraces, as also have the flanking spurs, particularly those descending to east and west, which show 17 and 13 terraces respectively. See Fig. **85**, p. 235.

An interesting feature of this fort is the existence of entrance passages, still to be traced in some parts. Unfortunately the writer had not time to make a sketch plan of the various works, which would well repay the trouble; it would be an interesting task to endeavour to trace the mode of entrance through 17 terraces to the summit area. In some cases the entrance path was a sunk way, in others a raised causeway, a block left in the excavation of the terraces. In both cases the terraces at either side are often at different levels, and doubtless the entrance passages would be palisaded lanes.

In Fig. **86**, p. 235, is shown a part of the terrace system, commencing a little way down the eastern spur. This illustrates to some extent the method of terracing, and of gaining access to such terraces. Though a spur of easy ascent yet note the manner in which the path winds about it to give access to the various areas. This mode of entrance is noted in many old forts. Emerging from a lower terrace at 1 the path ascends to terrace A, winds round it to the west and rises to terrace B, where it forks, one branch following that terrace to areas further north, the other rising to terrace C, where it forks again. The main path swings northward under the scarp, throws off a branch to the north and rises to D terrace. It continues along this terrace to the path junction at E, where it joins the entrance passage from the southern spur. From E one path rises and enters terrace F, and so gives access to the many terraces on the north side of G, which is the summit area.

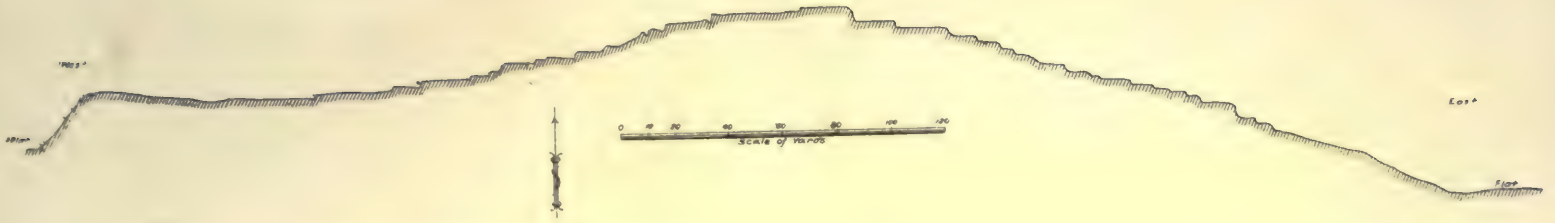


FIG. 85.—LONGITUDINAL SECTION OF NGA PUKE-PANGO PA. TAIAMAI DISTRICT, NORTH AUCKLAND.

[*Miss E. Richardson.*

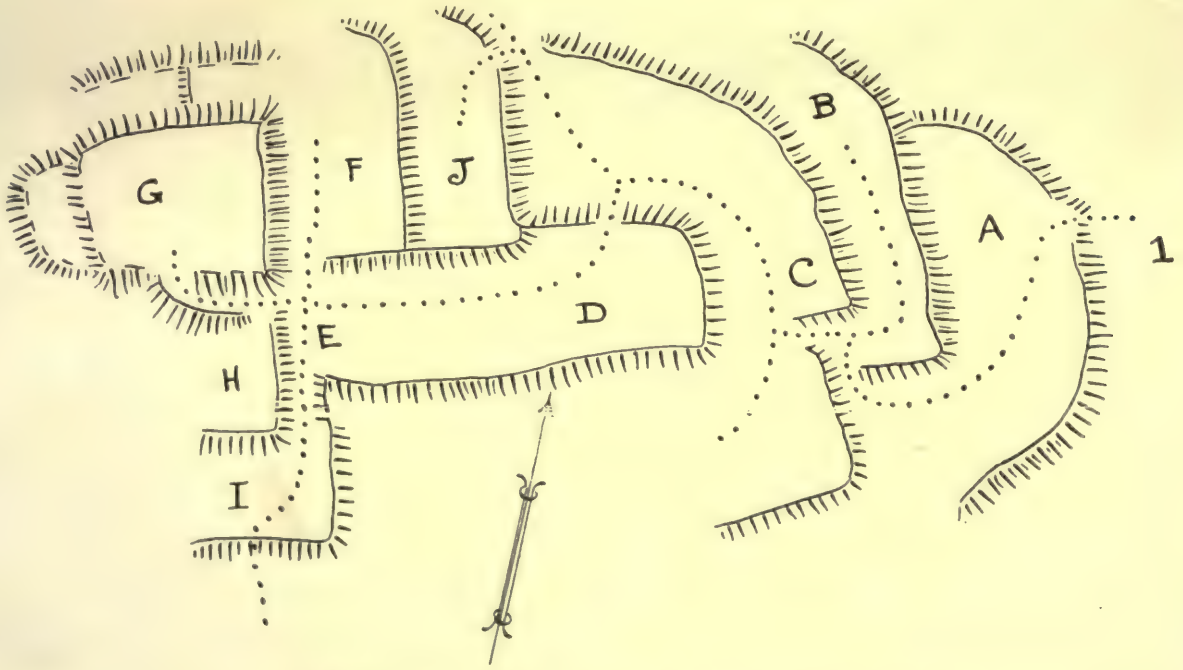


FIG. 86.—SCARPED TERRACE FORMATION OF NGA PUKE-PANGO.

Illustrating mode of access to terraced areas and summit, as shown by dotted lines.

[*Miss E. Richardson.*

Another enters terrace H and ascends the high southern scarps of G by means of an upward sloping embankment. The various offshoots from the main entrance paths serve the numerous terraces on either side.

Another entrance was up the southern spur, of which the uppermost terrace is shown by I; there are others below it. Where the path passes upward from I to E, it is a sunk way 8 feet deep, and here it would be easily defended. Such semi-subterranean ways were sometimes provided with a platform over them, on which stage men were stationed armed with long spears to defend the passage. They were also provided with heaps of stones, no mean weapon of defence as employed from such a coign of vantage.

FIG. 87.—SKETCH OF UPPER PART OF NGA PUKE-PANGO PA.

[*Miss E. Richardson.*

Another entrance was by the terraced spur running down from G to the westward, where 13 terraces on the spur ridge, as well as many subsidiary ones, had to be served by it and its branches. Yet another was from the low saddle on the northern spur.

One of the most interesting features of this fort is the singular mode of gaining access to the summit area G. The summit of the hill has been so excavated as to leave a rectangular area of 50 yards by 18 yards bounded by steep scarps 12 feet to 17 feet in height. The entrance thereto is on the south side by means of a sloping embankment rising from H terrace. This would be defended by palisading and a narrow gateway, and forms an un-

usual feature in native forts. The more common style is a straight or direct entrance with an angle in the approach thereto.

In advancing up the southern and eastern wing spurs it is noted that in some cases the terraces extend right across the spur, while in others they break level on either side of the entrance passage. Such a path may ascend a terrace scarp as a direct sunk way, or by a raised causeway, or as a sloping diagonal approach cut out of the scarped face; in yet other cases ladders were used.

At a distance of 120 yards from the lowermost terrace on the south side is a fine spring of water. There is also water in the gully on the northern side.

At the side of the sunk passage shown near E is what looks like the butt of one of the original stockade posts of the *pa*. Altogether this is one of the most interesting forts in the Taiamai district and would well repay further exploration. The whole district is a most interesting one and contains many other such antiquities, while Kaikohe, Hokianga, Whangaroa, Ororu and a number of other localities also possess many fine examples of native forts.

A pecularity of Nga Puke-pango is the absence of fosses and parapets, in which it resembles the volcanic cone strongholds described elsewhere. The whole occupied area has been carved into terraces, a prodigious task with primitive implements, the defences consisting of scarps and stockades.

Fig. **87**, p. 236, shows the form of the hill fort of Nga Puke-pango, and some of its many terraces. The longitudinal section from west to east shows the terraces on the western and eastern spurs, but many year's erosion has degraded the sharply defined scarp crests of yore, and also rounded the bases of such escarpments.

Continued rain led to the abandonment of the interesting task of examining and measuring this old Ngapuhi stronghold.

Headland or Promontory Forts.

Under the above heading are included, not only forts situated on promontories projecting out into ocean and lake, but also those situated on points jutting out from an inland terrace, plateau or hill. The two positions are so similar that they produced the same type of defensive works.

Te Rerenga Pa.

About one mile from Te Rewarewa *pa*, on the Wai-whakaiho river, Taranaki, may be seen a very strong *pa* on the brink of the terrace near the main road, on its eastern side, and just north of the brickworks. It is situated on a tongue-like projection of the terrace south of the present native village, and is remarkable for its heavy earthwork defences, except on the western side, facing the main road, where a cliff some seventy feet to ninety feet in height afforded a fine scarp defence, supplemented, as it assuredly would be, by a stockade along the summit of the bluff.

Advancing from the wide terrace on the northern side of the *pa* we see that the fort builders of old selected this situation on account of its natural advantages, *viz.*, the steep cliff on the western side and the gully on the eastern flank.

The first defence encountered is that marked A, B on the sketch. See Fig. **88**, p. 238. Here we encounter a wide ditch yet seven feet in depth despite the erosion of generations. The outer side of the fosse, the counterscarp, presents merely the batter face, but the inner side presents a scarp ten feet high, owing to the remains of a superimposed rampart or parapet of earth constructed along the top of the batter. On the top of this wall defenders would be stationed during an assault on this face. This scarp was probably one of fifteen or sixteen feet when the place was occupied. At the east end of this fosse are seen food storage pits extending under the inner scarp, a favoured device for economising space in west coast forts. This fosse A, B is fifty-eight yards long. A short length of earth rampart near A projects out into the occupied area (*1*).

Entering area (*1*) we find a second line of defence constructed across the spur at D, F which, being of great strength, divided the fortified area into two distinct forts, a manifest advantage to the defenders if beaten back from A, B, for they would have a second and self contained stronghold to retreat to.

From C to E runs a fosse about twelve yards long, with a rampart between it and F, D. The south side of F, D is a massive earthwork composed of the block of earth left between two fosses, plus a superimposed rampart. This rampart is about fifteen feet wide. This (*1*) area shows no signs of earthworks on its eastern face A, D, which looks peculiar, but the slope down to the gully was probably scarped on its upper part and surmounted by a stockade. Abrasion and erosion have probably obliterated such escarpment. It is not clear as to what purpose the short piece of wall at A was constructed for. The cliff on the western side is not far from the vertical, but quite scaleable as it is now.

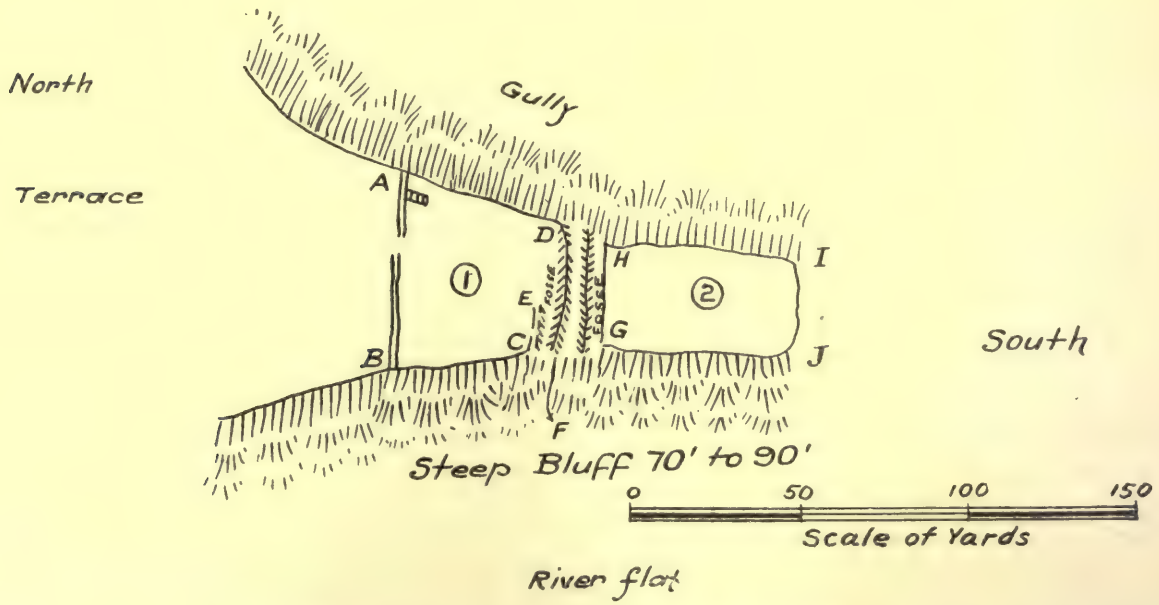


FIG. 88.—TE RERENGA PA AT WAI-WHAKAIHO, TARANAKI.

[*Miss E. Richardson.*

The fosse and rampart defences between D, F and H, G are about forty feet wide. From G to H, a distance of about sixty feet, extends a huge fosse thirty feet from brow to brow, showing a scarp fourteen feet high on its north side, and one fifteen feet high on its south side, although the fosse has a considerable amount of detritus in it.

On entering area (*2*) we note the same aspect of cliff defence on the western side, and a huge fosse and earthwork from H to G with a massive superimposed wall on the outer side of the fosse. In some parts the fosse is forty feet from brow to brow. These earthworks are the largest examined in this section of the district, and the *pa* must have been an extremely strong one when occupied.

The main entrance was probably at the north end, as shown in the sketch, with possibly another, or others on the eastern side. The higher part of the fortified area is higher than surrounding lands, and is almost level. An area outside the south end of the defences was probably occupied in times of peace. The water supply was apparently a creek at the base of the bluff on the western side.

Pari-hamore Pa, near New Plymouth.

This *pa* is situated on a ridge end about 200 yds. S.W. of Puke-tarata, described at p. 159. There is nothing very remarkable in its site or defences, but it serves as an illustration of a *pa* carved out of the end of a spur projecting out from a plateau lying to the south. In Okoare and Puke-tarata we have isolated hills of an elongated form divided into several sections by cross defences, and with the highest lying area the most strongly defended, as is common in native forts. If driven from the outer residential terraces of these places, the defenders would retreat to the upper part or crest of the hill, with its two or more divisions. If one of these fell to the enemy, the defender would retire behind the next line of defence, and so on, the *tihi* (summit, citadel, strongest defence) being the last stand.

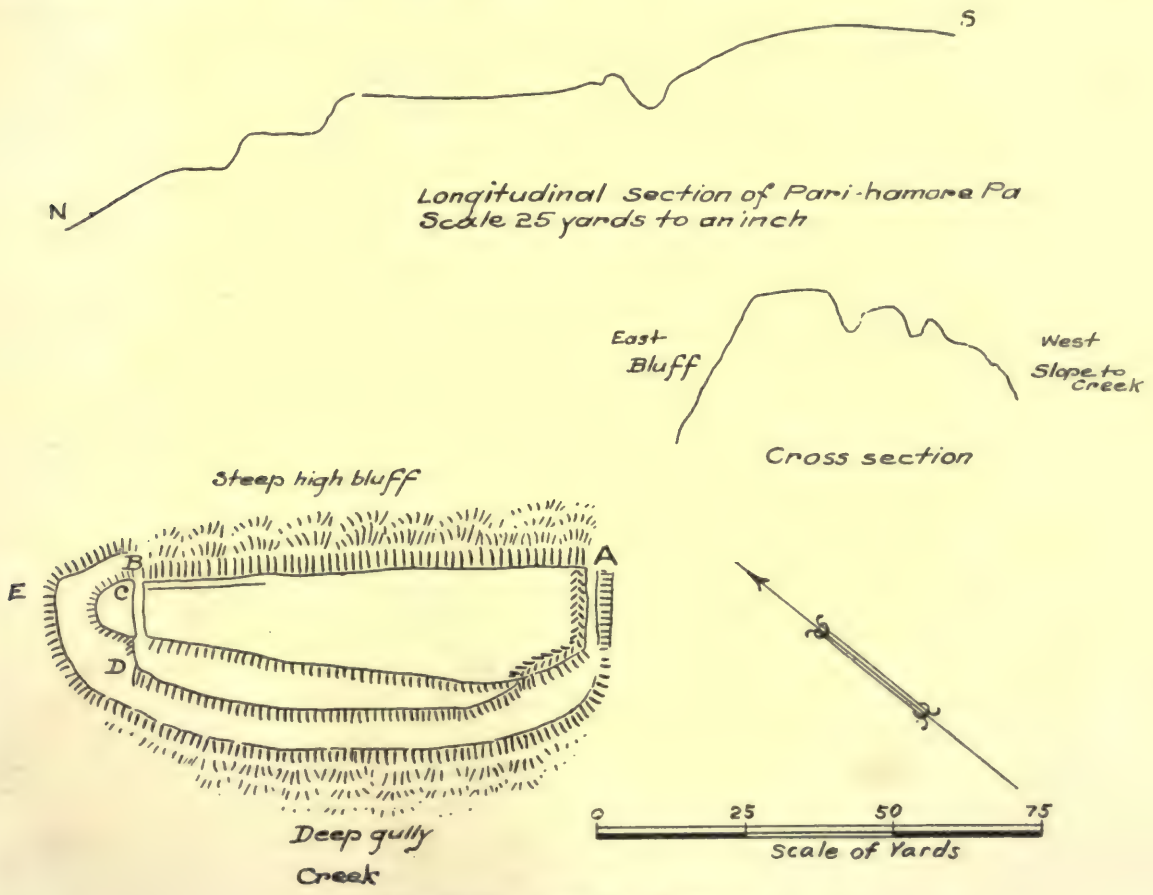


Fig. 89.—Pari-hamore Pa, Taranaki.

[*Miss E. Richardson.*

The outstanding features in connection with Pari-hamore are a deep fosse cutting off the defended area from the base of the spur, scarped sides, with residential terraces formed below the superior scarp on the sloping side of the spur.

The ridge on which the *pa* is situated lies about N.N.W. and S.S.E. Its eastern side presents a steep bluff, while to the west it slopes down to a swampy creek, probably the water supply of the place. The northern end of the ridge breaks down to the low ground near Puke-tarata *pa*.

The fosse at A (See Fig. **89** above) is the most important defence of this *pa*, for from the south alone would an attacking force be on a level with the defences. In any other part, after ascending the natural slope, a steep escarpment would be encountered, with a superimposed parapet in some parts, and certainly a heavy stockade on scarp brow or parapet.

The remains of a parapet are seen on the northern or inner side of the fosse at A, and that fosse is now 15 ft. deep and 30 ft. from brow to brow. The lower terrace on the western side runs into the western end of the fosse, rising as it does so. All earthworks show much erosion and this fort is not so well preserved as Puke-tarata. At the south end of the western brink of the upper area are remains of a parapet on the top of the scarped face.

At B is a scarp fifteen feet in height, at the base of which is a fosse. The outer scarp of the fosse, which is forty feet from brow to brow, is the southern base of a semi-circular terrace seven yards wide and about ten feet below the level of the upper area. The outer side of this small terrace breaks down in a 15 ft. scarp to a lower terrace that runs right round the western face to the fosse A, and is 20 ft. to 25 ft. lower than the upper terrace which is not continued to the southern end of the defences. Terraces are about 20 ft. wide.

A curious feature in these two terraces is the manner in which they lose their terrace-like aspect at certain places and resolve themselves into a fosse with a heavy outer rampart, as illustrated in the cross section. The upper terrace runs into the western end of B fosse, and D marks the old entrance passage from the lower terrace. The entrance up the outer scarp was probably at E, where the spur drops down to the low ground. There would be at least one other and smaller entrance on the western side.

An examination of the western terraces tends to show that three different forms obtained—(1) a flat terrace; (2) a flat terrace with outer parapet; (3) an inner fosse and heavy outer wall or rampart. Below the lower terrace the ground falls steeply to the creek. The changing of fosses into flat terraces, and again into trench and rampart, is of much interest. There was some definite object in this not clear to the observer.

This fort has an altitude superior to that of Puke-tarata and commands a fine view of land and sea. But few storage pits were noted here. It is situated near the Tehe-nui stream, and was occupied by Ngati-Tupari-kino, a clan of the Atiawa tribe. Some particulars concerning this place and its folk may be found at p. 243 of the *Maori History of the Taranaki Coast.*

Kumara-kaiamu Pa.

This old fortified place is situated in the Urenui township, on the left bank of the river of that name in northern Taranaki. It is situated on a point projecting out from a level plateau. Its eastern side is a steep bluff at the base of which flows the Urenui river. See **90**, p. 241. This steep slope apparently formed the main defence on that side; the upper part was probably very steeply scarped and surmounted by a stockade. The A F face has a length of 44 yards. This shows an unbroken steep face except at the northern end, where a terrace formation begins as shown in the sketch. This steep scarp continues on round the point of the spur at F and onward to D and E, with the terrace below it. This part is undoubtedly an artificial escarpment made when forming the terrace, though it has become much eroded, the soil being of a light, friable nature. On the other hand the eastern face now carries its original steep slope for about seventy feet down, after which it becomes even steeper. A heavy road cutting has destroyed the original aspect of the lower parts, the same having been the first road formed from Urenui to the old military station at Puke-aruhe.

At F the terrace is 15 ft. wide, but on the western side of the spur it has lost much of its original width, owing to the erosion of its outer parts and the falling of debris from the upper scarp. Opposite D it is now only 8 ft. wide. At G it was probably 18 ft. wide originally. Proceeding from F to G this terrace descends somewhat, hence the inner scarp at the latter place is much higher than it is at F, being about 12 ft. at the latter place but fully 18 ft. at G.

At G the terrace resolves itself into a wide fosse which runs right round the southern side to the edge of the bluff at M. This is a feature not uncommon in native forts, a terrace round a hillside running into a fosse that forms part of the defensive works across a ridge. In some cases the observer notes an abrupt drop or rise in the terrace level, whereat a cross line of

stockading would be of service to the garrison in the event of an enemy entering the area. This peculiarity is seen in the case of the Urenui *pa*.

The defences of the inner and upper area of this small fort were evidently a high steep scarp, up to 20 ft. in height from A to F and round the western side to E, which steep scarp would certainly be surmounted by a stockade. The E to A line, or base of the triangle, shows heavier defences, as this represents the base of the projecting point, the weak part of all headland forts. The two longer sides of the triangle have steep slopes below them, to the river on the east,

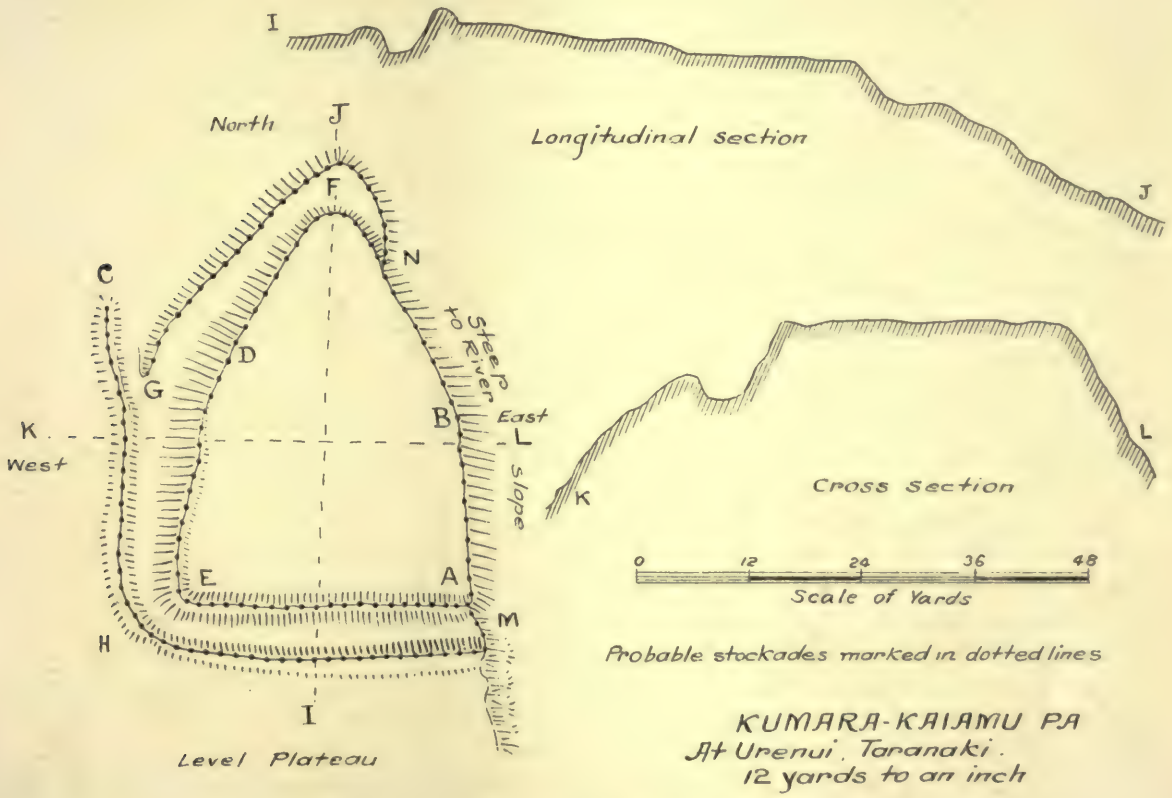


FIG. 90.—KUMARA-KAIAMU PA, AT URENUI, TARANAKI. [*Miss E. Richardson.*
See p. 240.

to the low river flat on the north and west. But to the south lies a level area of plateau presenting no such advantages for defence, hence the deep, wide ditch with superimposed rampart on its inner scarp crest, and apparently another on its southern side. The terrace from N to F and on to G, evidently a residential area, was defended undoubtedly by a stockade along its outer edge, outside and below which would assuredly be another scarp of some height to render approach difficult. Erosion and other causes have destroyed the symmetry of such escarpments.

From G on to the E H corner the terrace bears the aspect of a wide fosse 30 yds. in length and 13 ft. wide at the bottom near G. Its former width at bottom must have been fully 16 ft. for it contains much debris. The inner scarp at E is 19 ft. in height. The western or outer side of this fosse presents its own scarp upon which a superimposed earthen rampart has been built, this aspect meaning that the outer defences from G to H do not include the full width of the base of the point which here connects with the plateau to the south. This outer scarp of the G to H fosse is 8 ft. in height at the south end and 4 ft. at the northern end, but both scarp and superincumbent wall are much abraded.

The opening at G shows the former entrance to the fortified terrace area. The entrance passage is a sunk way about six feet deep extending downwards from the terrace. It is but a narrow way and is protected by the outer wall which swings out somewhat. The approach to the fort was evidently up the spur face from the flat to the north, through the C G entrance passage to the terrace. The entrance to the upper area from the terrace was not located, but was probably between D and F. West of the H C wall is a gentle slope that, although not defended by any earthworks, was evidently occupied as hut sites, as shown by the shell refuse. The wall is now about 5 ft. higher than this outside area; it was probably 7 ft. higher originally.

On the southern face the fosse is about 8 ft. wide across the bottom, now rounded by accumulations of detritus, and 15 ft. wide at a height of 6 ft. Opposite H its outer scarp is 10 ft. in height. Brow to brow measurements run from 20 ft. to 30 ft. The eastern end of the fosse (see M) narrows somewhat, though preserving its former depth and batter aspects. On the outside of this H to M trench there seems to have been another parapet, for the surface is raised from one to three feet for a width of several yards. It may have been levelled by Europeans. South of this the land is a level plateau formation as far as the main road, and shell refuse betokens an occupation of this part in Maori days. The inner scarp of the H M trench seems to have retained its original batter in some parts, owing to the growth of vegetation; at such parts we note an almost perpendicular face 11 ft. high, above which is another 5 ft. or so that is much less steep, outer parts having crumbled away. The upper part of this inner scarp is the outer face of a parapet or rampart that rises some 4 ft. to 6 ft. above the level of the interior area. There also seems to have been a parapet along the western side of the inner summit area (*tihi*); it can be traced for about 16 yds. but it has evidently lost much by a crumbling process. In such loose soils it is often impossible to judge as to what extent parapets were erected on scarp brows.

This *pa* of Kumara-kaiamu is a very good illustration of methods employed in fortifying such points or headlands, wherein two or three faces are slopes more or less steep, and the other is the connection with the hill, range, terrace or plateau forming the base of the spur or headland. This fort may be compared with that of Te Kawa which it much resembles, and which is situated but a short distance away.

On the brink of the bluff about 20 yds. south of the outer defences near M is a small area defended by fosse and wall. The interior area is about 20 yds. by 12 yds. It is possibly a European work; it does not look like a Maori position.

West of this level area, on the further side of the road may be seen the site of one of the old camps of the Armed Constabulary, situated on the brink of the plateau. Prior to that occupation Captain Good held a position at Pihanga, on the hill to the westward.

From Kumara-kaiamu, Pohokura lies almost due north; Urenui *pa* lies about N.E., Te Kawa *pa* S.E. and Pihanga W.

The steep bluff on the eastern face of Kumara-kaiamu is about 150 ft. high.

Historical notes concerning many of these old forts of the Taranaki district may be met with in the *Maori History of the Taranaki Coast,* published by the Polynesian Society. See pp. 117 and 368 of that work for some remarks on Kumara-kai-amu. By the way, when a detachment of the A.C. Force was occupying the post hard by, the natives proposed that the name be altered to Kumara-kai-*rama,* or Rum drinking Kumara. This seems to imply that the members of the garrison were not also members of the Blue Ribbon army. Kumara-kai-amu was occupied in olden times by the Ngati-Hinetuhi clan of Ngati-Mutunga.

Te Kawa.

This old fort serves as another illustration of headland *pa.* Its situation is similar to that of Kumara-kaiamu, which lies at no great distance to the N.W., the situation being the top of a spur or point jutting out from a level plateau. The fortified area is of the same triangular form as that of Kumara-kaiamu, with deep gullies on two sides, the third side, or base of the

triangle being represented by a deep fosse dividing the fortified area from the level plateau to the south.

The small area within the main defences was not sufficient to contain many people, hence the B C line of outer defence was erected in order to enclose a residential area of flat land. See Fig. **91**, p. 244. This outer defence was evidently a light one and this area would be abandoned in case of a serious attack. The B C line is 67 yds. in length, and represents a shallow ditch from one to three feet deep; evidently it has been filled up. On the inner side of the ditch are the remains of a low earthen wall, now one to three feet high. This parapet has probably been taken to fill up the ditch, presumably by Europeans. This wall or parapet is continued as far as A. South of the B C defence lies a level terrace for 100 yards, then another terrace some five or six feet higher commences. From C to D is a distance of 20 feet, and here we find no traces of any defences whatever; probably a stockaded entrance was here.

The probable lines of stockades are marked on the plan by means of dotted lines, and we see that they occupy two positions, the brow or edge of terraces and the *maioro* (parapets or ramparts). The heaviest defences of the position are naturally those on the southern side, where the land is level. The other two sides of the triangular fort show steep slopes down to small streams. The E F line shows a deep fosse some 57 yards long excavated across the base of the hill point, which fosse is in a fair state of preservation. It is from 9 ft. to 12 ft. wide across the bottom, its counter scarp is 10 ft. in height and the inner or northern scarp is 16 ft. at the western end and 12 ft. towards E, the eastern end being more abraded. The increased height of the northern scarp of the fosse is explained by the existence of a superimposed wall or parapet on that side. There is a considerable collection of detritus in the fosse and the original height of the inner scarp was probably 18 ft. to 20 ft., that of the outer scarp 12 ft. or 13 ft. The present brow to brow measurement is about 25 ft. This must have been a formidable defence in the days of native warfare, when the lack of missile weapons is considered. Some *mahoe* and *karaka* trees are growing in the fosse.

At F the fosse is not continued out to the edge of the hill but turns northward, increasing its width, to emerge on to the terrace near G, the counter scarp of this part of the fosse being 11 ft. in height. The inner scarp of the terrace extending from F to H and on to E shows much decay by erosion and abrasion. Proceeding from G towards H the terrace has, for thirty yards, been almost obliterated, a process much accelerated by the trampling of stock, which trampling destroys the protecting sward of grass; hence we see that the best preserved of native forts are those protected by a dense growth of forest, scrub or bracken. The inner scarp of this terrace is 18 ft. in height. Towards H the terrace is well preserved and from I towards E is an outer wall now 3 ft. to 5 ft. high, the terrace enclosed by the wall running into the eastern end of the big fosse at E in the same way that it does on the western side. This is a feature in some native forts that is worth drawing attention to, *viz.*, the gradual change of form that occurs where an open flat residential terrace changes to a narrower terrace with a parapet along its outer edge, and which again gradually narrows and is merged into a fosse used for defence only. It is therefore difficult in some cases to determine where occupation by huts ceased and where the purely defensive fosse began.

It is also worthy of note that the terrace extending round the eastern and western faces of this position does not conform to the slope of the ridge summit, as is the case in many forts, but is practically level, which means that the inner scarp increases considerably in height towards the south. At J appearances of a former entrance to the summit area are visible. The entrance to the terrace from the outer area was probably at I, where the spur drops to the hill base, or on the I G side.

The scarps of Te Kawa were originally steep ones, but little removed from the vertical, as is shown in parts that are well preserved. It is well known by our road makers that some loose friable soils, such as pumice for example, suffer much less from erosion when given a steep batter.

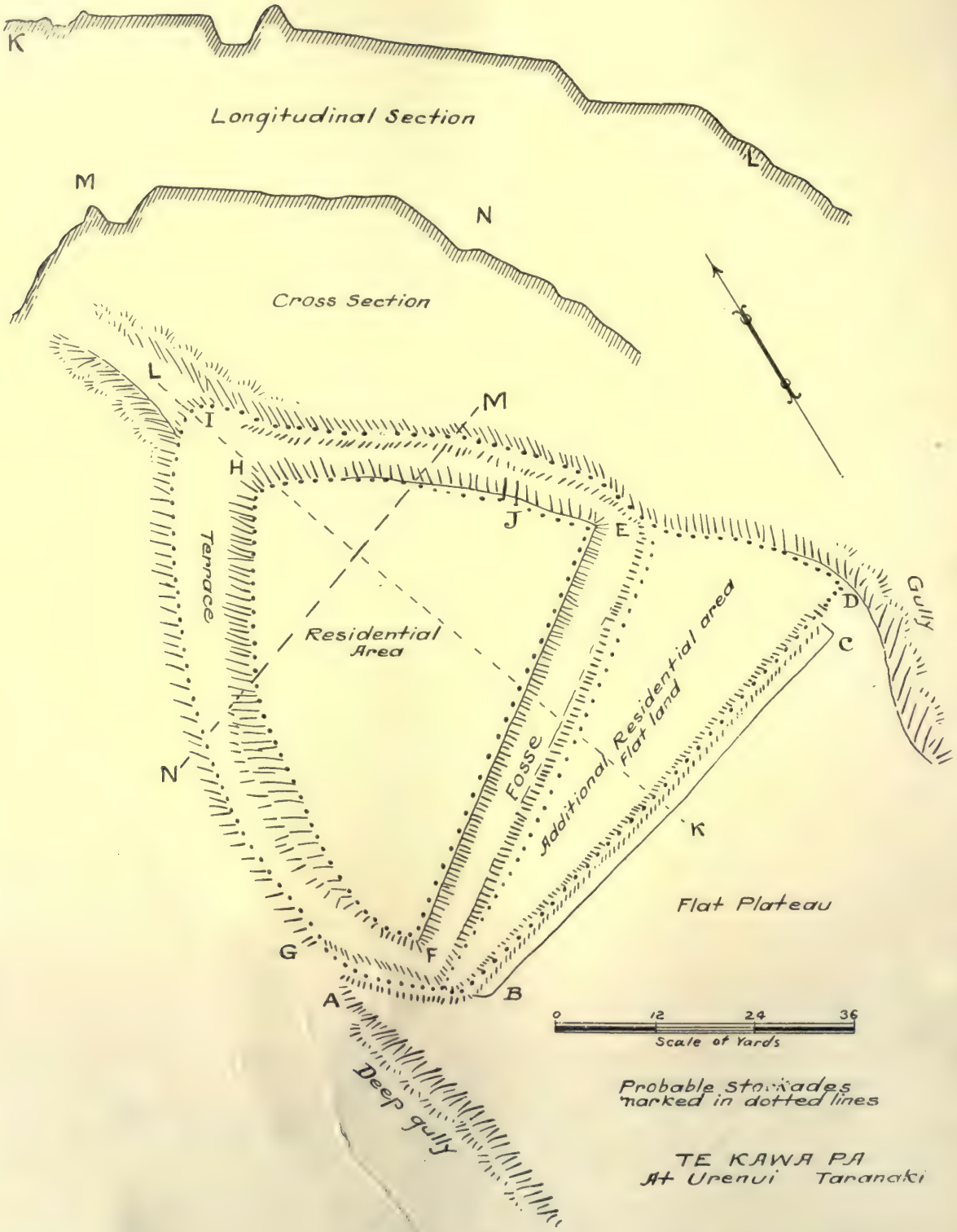


FIG. 91.—TE KAWA PA AT URENUI, TARANAKI.
See p. 242.
[*Miss E. Richardson.*

From the corner of the terrace at I the narrowed spur drops sharply for about 80 yards to the road, and on the eastern side of this spur a small triangular terrace is seen. This is away from the defended area.

Old storage pits and hut sites exist on the summit area of Te Kawa, but all such signs have been obliterated from the terrace by debris from the upper scarp.

From this fort the Urenui *pa* lies a little west of north, Pohokura lies N.W. by N and Kumara-kaiamu N.W. by W.

Lying about N.E. by N. from Te Kawa is a small *pa* named Pa-oneone, situated on the low lying end of a spur crossing the road line. The inner defences of this place enclose a habitable area of about 40 yds. by 23 yds. This summit area is flat and has ramparts on three sides. Outside these is a deep fosse, then the remains of a ponderous earth rampart, with another fosse outside it. Where the hillside is steep these earthworks are lighter. All these works are considerably dilapidated.

The situations of this and other old forts of the Urenui district are given on the sketch map. See p. 165.

On the top of the ridge about 300 yds. south west of Pa-oneone is an old *pa* known as Moeariki, which shows the simplest form of such places. It is unusually rectangular and symmetrical for a native work; the inner space of 40 yds. by 35 yds. being surrounded by a parapet or wall now much abraded and from 2 ft. to 6 ft. in height. Outside this is a trench 10 ft. wide, with an inner scarp of 8 ft to 12 ft. and counter scarp up to 8 ft. This counter scarp shows, in places, some signs of a superimposed wall or parapet of inferior magnitude. The water supply of this place was the gully on the eastern side, about a hundred feet below the lines of defence.

Two other small fortified places were situated below Te Kawa, between the road and the river, as shown on the map.

The figure 6 on the map denotes the site of the old Maruwehi *pa,* now almost destroyed by the sea. Between it and 8 (Urenui *pa*) is the site of an unfortified village named after Maruwehi, occupied by local natives when they returned from the Chatham Isles, and from which they removed to their present location on the main road. The map shows the location of a considerable number of pre-European fortified places in the vicinity of Urenui. See p. 165.

With regard to the curious and symmetrical forms of oblate store pits, Dr. Buck, a native of Urenui, whose ancestors held the forts we have described above, informs us that he examined a double pit at Te Mimi in this district. This singular subterranean store pit showed one pit below another. As the entrance to the lower pit was through the floor of the upper one, presumably the latter would need to be almost emptied of its contents ere a person could gain access to the lower one, unless some special provision was made for a passage.

The Mawe Pa at Lake Omapere.

This small *pa* is situated on a promontory on the eastern shore of Lake Omapere. There is nothing of particular interest about this place except the fact that it is one of the few of such places whereat are yet seen remains of the former stockades. Mawe also serves as an illustration of this type of fortified village, as situated on a point of land almost surrounded by water. Some interest is also attached to it from the fact that it has been mentioned by several early writers.

The Rev. Mr. Wade wrote as follows concerning Mawe early in last century:—"A native *pa* or enclosed village, is usually surrounded by a high stockade, or irregular wooden fence, the posts of which are often of great height and thickness, and sometimes headed by the frightful carving of an uncouth image; not for worship, for the New Zealanders have no idol worship whatever, as far as I could discover, but to fill their adversaries with terror. *Pa* thoroughly defended for times of war have double fences, with a deep fosse, and high embankments; and very elevated ground used formerly to be the favourite site.

"A short time since, when war was expected among the Ngapuhi, the people of Mawe, near the Wai-mate, fortified their *pa* with a thick wall built up of loose stones, gathered out of their very stony soil. This stone wall was really a very creditable piece of native work, with its bastion like projections, and its ports for the discharge of musketry, but it was erected chiefly as defensive.....A similar rumour of war.....raised up also, near the Wai-mate, another fence of a different fashion, and altogether unlike the ordinary native fences. The head man at Ranga-unu had been at Sydney.....and evidently not without improving his opportunity. The wood fence, of large split stuff, put up under his direction, with its even cut tops, its ornamented gate posts, and substantial gates, gave to the *pa,* situated in a pretty spot on elevated ground, really a half civilised appearance."

In a little pamphlet entitled *The Present State of New Zealand,* published in 1840, Mr. E. Campbell remarks that he saw near Wai-mate, Bay of Islands, a group of huts "surrounded by an apparently very antique wall, about five feet thick, built of small round stones, which are very ingeniously placed, there being no composition of any kind to make them adhere."

This last may or may not be a reference to Mawe, but was probably a small temporary abiding place near cultivation grounds.

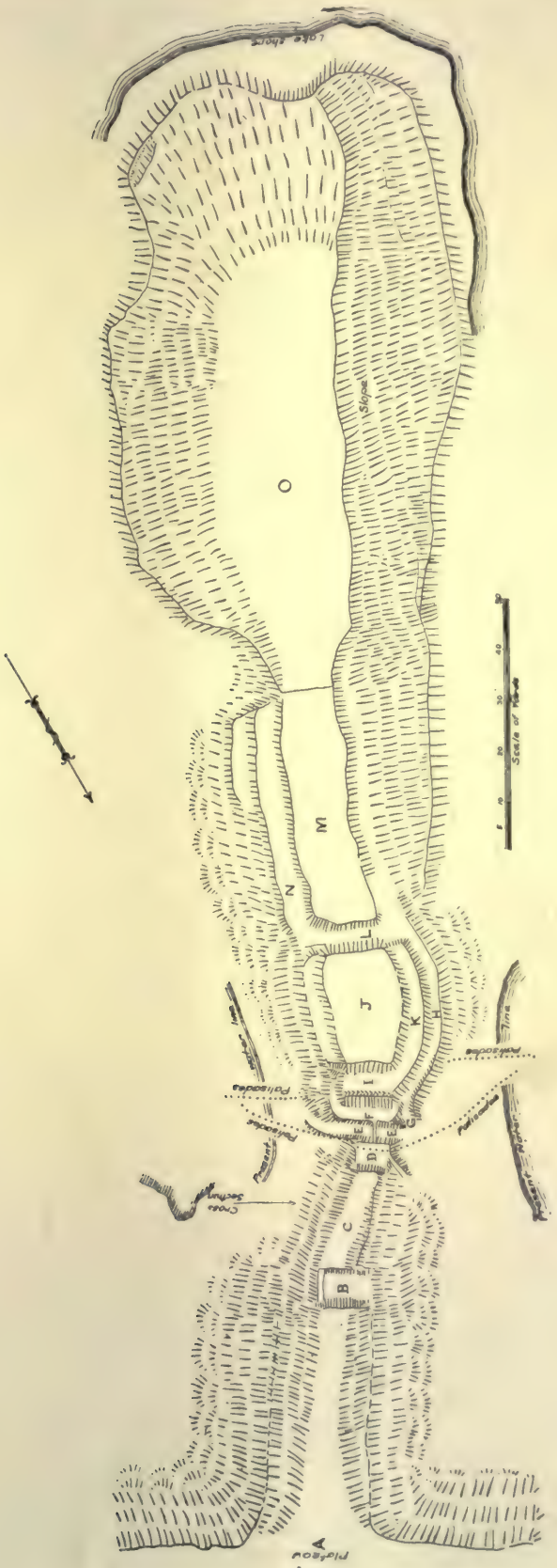
There is but little evidence now of stone walls at Mawe; one short piece was seen, as also a scarp that has been faced and partially heightened with stones. The place could never have had a stone wall round it; the cliff was, in most places, sufficient protection, together with stockades. The remains of any extensive wall could not escape the observer's notice. The only defensive works were those across the narrow base or neck of the promontory and the fosse and scarps across the point that protected the different areas. The promontory was surrounded by water except the narrow neck connecting it with the mainland, its sides are very steep, in many parts presenting low but perpendicular cliffs. These water fronts would be easily defended, and in some places were probably stockaded. The lake waters were at a considerably higher level formerly, and are said to have been reduced in late times by Europeans, who lowered the outlet. There can have been nothing in the way of circumvallation and probably little more than a very short loosely built stone parapet on the outer side of the entrance passage, and a short stone faced scarp in the low saddle.

The Mawe point juts out into Omapere lake towards the S.W. It was abandoned by the natives when Europeans became numerous in the district, and inter-tribal fights were discontinued. The promontory is now partially covered with a growth of fern, and partly with light bush composed of honeysuckle, *Pittosporum, Cordyline,* small *totara,* etc. At a little distance from Mawe are seen a few remaining rifle pits of the modern *pa* of Okaihau whereat hostile natives were attacked by Imperial troops in the year 1845.

From the plateau-like formation at A (See Fig. **92**, p. 247) a spur trends downward toward the lake for 45 yds. falling about 15 ft. in that distance. At B is a first or outermost defensive work across this downward sloping spur. From the N.W. side of the spur a fosse 13 ft. wide across the bottom has been excavated nearly across the spur, but a block of the original formation, 4 ft. wide, has been left at its S.E. end to form an entrance way. The outer or S.E. side of this block has been steeply scarped to a depth of 6 ft. which is also about the depth of the ditch. There must have been a stockade on the outer or upper side of the fosse, the wings of which would extend down the spur on either side to the lake shore. The fosse is 20 ft. long and slopes downward, its scarp being 6 ft. high, while its counter scarp, on the upper side, is 12 ft. high.

C area is the narrow rounded spur top, falling 9 ft. in 20 yds. It is but 3 yds. to 4 yds. in width, and both sides have been steeply scarped for defensive purposes.

Descending a 5 ft. scarp brings one to the small area D at the bottom of the saddle, across which has been excavated the fosse E.E. This D area is but 3 yds. to 4 yds. by 6 yds. or 7 yds. in size. From its N.W. side a graded path 6 ft. wide runs down to the lake shore which is but a few feet below the level of D area.



[Miss E. Richardson.

FIG. 92.—MAWE PA AT LAKE OMAPERE, NORTH AUCKLAND.
See p. 245.

The E E fosse is 5 ft. below the level of D, but has probably been deeper. The original formation here is partially soft rock, and a block of this 3 ft. in width has been left as a causeway or means of communication between D and F areas. This causeway has perpendicular sides and would be easily defended in pre-gun days; it is at the same level as D area.

The fosse is 7 ft. or 8 ft. wide, with vertical scarps; its south eastern end is 10 yds. long and slopes downward to within a few yards of the lake shore. The counter scarp of this fosse is, in its upper part, partially built up with stones. From the outer or south eastern end of the fosse a graded road 6 ft. wide slopes down to the beach, as shown on the plan, its outer side being built up with boulders.

The most interesting feature of this old fort is the fact that a former line of stockade is still plainly seen throughout its original length. Although most of the palisades have disappeared, yet the butts thereof remain, thus rendering this line of defence clearly traceable. Some have decayed to the ground line but many are from one to three feet high still; and a few are yet higher. Many show signs of having been cut through by a remarkably poor axeman. The butts are now from three to six inches in diameter but have evidently lost much substance by decay. The stockade crossed area D at a distance of 4 ft. to 5 ft. from the edge of the fosse. Here the butts appear to be *totara,* a very durable wood, and are now 6 in. in diameter. The line of stockade crossed D area as shown by the dotted line, descended the steep 6 ft. scarps flanking that area, and extended out into the lake on both sides, not in a direct line but curving lakeward. In both cases another stockade, commencing at the base of the bluff side of the promontory, extended straight out into the lake somewhat beyond the curved lines. The two lines do not appear to have connected, but an open space seems to have been left in each case between them, that is to say at the apex of the triangle. The edge of the lake is at present 30 ft. from the base of the promontory on the south side, and 50 ft. on the north, but prior to the lowering of the water level it must have reached the base of the point, hence the stockades were situated in the lake and enclosed two water areas. These lines of palisades may have been so extended out into the lake for defensive purposes alone, but the observer cannot help conjecturing that they served two purposes, they would impede the progress of a hostile force endeavouring to take the fort on the flank, and they would also provide two easily closed havens to shelter the small lake canoes formerly used here. We know that such havens were occasionally used in former times. At present the water covers merely a minor portion of the enclosed areas. The absence of debris at the base of the low cliff on the northern side of the point shows that the water must have receded therefrom within recent times.

A walk round the point shows us that the sides are, in their lower parts, mostly a vertical rock formation of 6 ft. to 12 ft. in height, and in some places higher. The lower and more accessible parts were probably stockaded. Above the bluffs is sloping ground more or less steep, while the summit has been levelled by excavation into residential areas. The outer end of the promontory carries a very gradual slope down to the beach where, apparently, there was an entrance to the *pa* for those who arrived by canoe. On this slope are *puriri* trees 30 in. in diameter. Huge boulders round the base of the bluff at one time formed a part of the rock mass which is the core of the promontory.

The fosse E E is the lowest part of the low neck connecting the promontory with the mainland. In proceeding lakeward from the fosse along the point one has to ascend about 20 ft. On the inner side of E E fosse is a narrow terrace 8 ft. wide, marked F, to which access was gained by the causeway. This terrace does not extend along the S.E. side of the promontory, and at its other end is a sudden drop of 4 ft. to an entrance path that extends from the beach upward and westward from G to H, and onward under terrace K to L fosse at the inner end of J area. From G a short length of stone parapet has been built up along the outer edge of this road, and which increases the height of the exterior scarp by about 3 ft. This is the only true wall of stones now seen, and it is but a small piece. The path up the sideling is in the

form of a trench 1 ft. to 4 ft. deep. This aspect may have been brought about by traffic and the passage of storm water, or it may have been originally a sunk way.

From F terrace no direct access could be gained to I, for above F rises a steep scarp of 12 ft. the upper 3 ft. of which is the outer face of a parapet. I represents a levelled area 10 ft. wide which may be termed a terrace with outer parapet. This extends round the slope as terrace K, now about 8 ft. wide; it has an upward slope as it proceeds. There is a terrace on the other slope of J. area that lies somewhat higher than I.

From I we ascend a steep scarp of 8 ft. to area J which is a levelled summit area 22 yds long. Terrace K stops abruptly at the inner end of J area, as shown, and the path H passes on to afford access to area M.

At the outer end of J we descend a much eroded scarp of 8 ft. to 10 ft. into fosse L, 9 ft. wide. The S.E. end of this fosse opens out and descends 9 ft. in 35 ft. to form a terrace. Outside this N terrace is a 12 ft. drop to the beach.

Area M is 4 ft. higher than the fosse, is 47 yds. long and has been levelled. On its S.E. slope are two terraces, the upper one, N, 18 ft. wide, and the lower one 14 ft. The other side slopes steeply to the cliff head.

Leaving M one rises 8 ft. in 13 yds. to reach the more level part of area O, the S.E. side of which has a gentle slope for 40 ft. then a steep drop of 8 ft. to the beach. Hut sites have been levelled on this slope. The upper part of O area is almost level for 75 yds. and then slopes gently down for 30 yds. to the low lying end of the promontory, where there is a small indentation. This was a fine residential area, commanding a good view of the lake. The plan will afford the reader some idea of the form of this headland fort, and of its defences.

Mawe was occupied by the chief Kawiti and his followers in the early days of European settlement, but has the appearance of having been a pre-European stronghold. It would be commanded by musket fire from the edge of the plateau, and one fails to see how it could have been tenable after the introduction of firearms.

Pukekohe No. 1 Pa.

This is one of three small fortified places situated on a low ridge on the coast between Urenui and Te Mimi, northern Taranaki. Two sides of this small *pa* are marked by sheer cliffs, their bases washed by the ocean. To the east the ridge slope descends to a swampy hollow, and, outside the northern earthwork defences, the ground falls to a hollow except on the west, where the land rises gradually to No. 2 *Pa*. It is evident that much of the ridge has been lost by a process of erosion; the whole of this coast line is fretting away at no slow rate, a process described by the Maori of old as "*Te ngaunga a Hine-moana,*" *i.e.*, the gnawing of Hine-moana (personified form of the ocean). The Lady Ocean is eternally nibbling away the broad breast of Papa, the Earth Mother.

The summit of this small fort, area A, is 33 yds. in length and from 18 yds. to 26 yds. wide. See Fig. **93**, p. 250. B is a small razor back point jutting out into the sea, and is 30 ft. below A area. Terrace C is 24 ft. wide and connects with the northern fosse at D, the bottom of which is on the same level as the terrace, though only 6 ft. wide. The eastern scarp of A area is 20 ft. deep at its southern end and 10 ft. at the north end, caused by a downward slope of the terrace toward the seacliff. The northern defences consist of a steep scarp, the fosse D, and an earthen rampart outside it, outside of which is another fosse with an inner scarp of 16 ft.; counter scarp 6 ft.

Of the Omaha *pa* at Tonga-porutu, Mr. Percy Smith writes that "Omaha was originally a projection of the coast, but which has since been severed from the mainland by a huge trench 40 ft. deep and 60 ft. wide at the top, by which it was converted into an island at high water. The other sides are sheer cliffs one hundred feet high."

Of Te Kawau *pa*, south of Mokau, the same writer says:—"The main *pa* was siutated on an isolated rock, partly surrounded at high water; the extent of the top was about 75 yds.

by 40 yds., and the only approach was from the landward side, by using ladders which were drawn up after the inhabitants had retired within the *pa*. On all other sides the cliffs rose sheer to a height of from eighty to one hundred feet. The other part of the *pa* was separated from

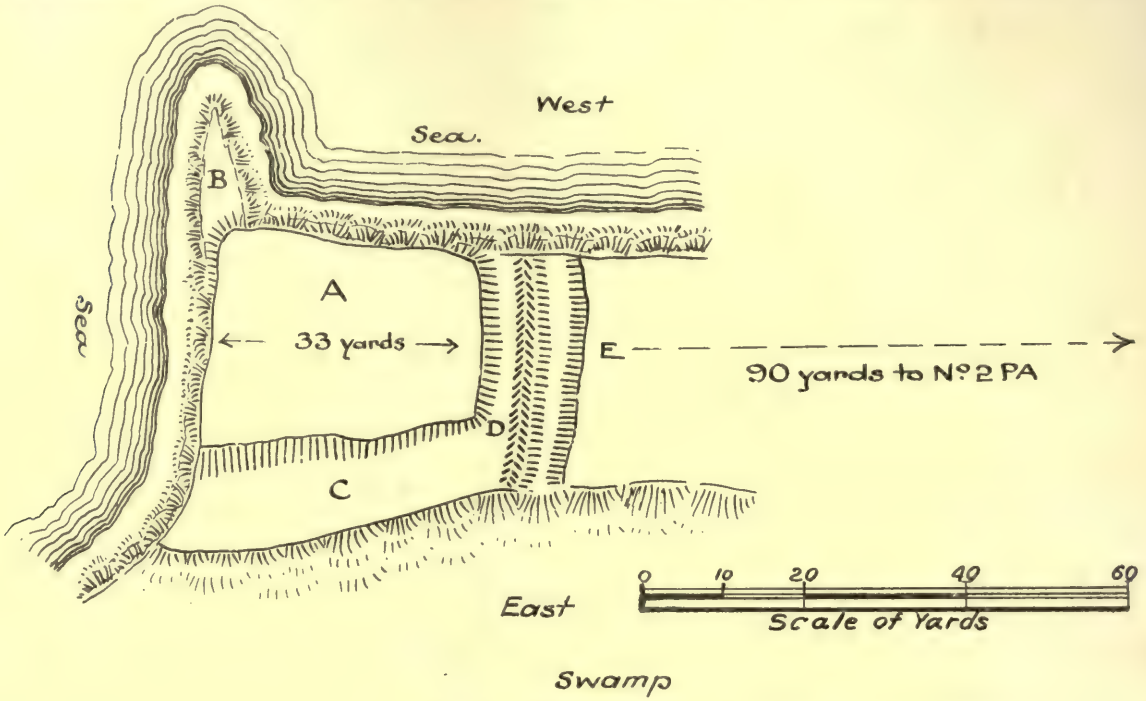


FIG. 93.—PUKEKOHE PA, TARANAKI.
See p. 249. [*Sketch by G. L. Stephens.*

this citadel by a deep rift or chasm 20 yds. wide and 35 yds. deep.....The narrow neck, about 12 ft. or 15 ft. wide, which connects this part of the *pa* with the mainland, is almost completely severed by a deep trench, and along the neck was the only approach to the *pa*, and on all other sides the cliffs rose perpendicularly from the sea and stream, forming an impassable rampart.''

TUTAMAHURANGI.

A small promontory fort on the rugged coast line about three miles south of Titahi Bay is a fair example of the rough precipitous places occupied by the Maori in former times, places that essentially lent themselves to defence, and whereat but few artificial defences would be seen. This point is known as Tutamahurangi to the Maori, and is marked as Tomahawk Point on some maps. It is not a spur trending downwards from the ridge, but juts out directly from near the base of a very steep slope some hundreds of feet high. It extends out as a razor back ridge, its crest nearly level, for some distance, then widens out at the end for about 50 yds., then throws out a very narrow razor back spur that falls steeply to the beach about 200 ft. below. The wider part of this little promontory has been utilised as a *pa*. A trench has been excavated across the narrow ridge at the only place, apparently, where the rock was not near the surface. All other artificial defences must have consisted of stockades. The outer part of the point, the part occupied, lies somewhat higher than the inner part between the trench and the steep range. The northern side of the point is a steep cliff, almost inaccessible; the outer part of the south side is similar, but the inner part falls less steeply to a curious form of hanging gully that does not extend down to the beach on the south side, but runs out on the head of a steep bluff above the beach. The gully is much rounded and slopes upward to the base of the promontory across which it forms a hollow at the base of the range face. The rounded bottom of the gulch was

probably occupied; waterworn stones used for domestic purposes are there seen. Its upper part is now occupied by a grove of *ngaio, kohe* and *karaka* trees. The lower parts of the gully are 40 to 50 ft. below the level of the *pa.*

The trench cut across the point is about 9 yds. long, its southern end opening out on to a small artificial terrace 11 yds. long and 4 ft. to 6 ft. wide. The trench shows much abrasion and is partially blocked with debris. It was originally perhaps 8 ft. deep and 6 ft. wide at the bottom; rock would stop further excavation. Part of the western scarp has apparently been built up with stones.

Crossing the trench we find that the top of the ridge, the part formerly occupied is 15 yds. wide. At 15 yds. further on it is 20 yds. wide and from this it gradually narrows to a point, hence the area is a small one. This part shows a very stiff and hard clay overlying rock, and the surface has been levelled by excavation into 10 or 11 small linchets at different levels. These were the hut sites and while some would accommodate but one hut, others would hold several. One would suppose that the place would be pretty well filled with one hundred persons in it. A number of waterworn stones are seen on the *pa,* such as were used for domestic purposes. The kitchen shell refuse seem to point to the fact that *Haliotis iris* formed no inconsiderable portion of the food supply. The point of this promontory is a wild mass of rocks difficult to pass round and where the almost vertical strata have been worn into grotesque and curious forms by the action of the sea which ceaselessly assails them.

The southern side of the *pa* was doubtless defended by a stockade, as also the trench scarp and any other accessible place.

Tutamahurangi was a very small place and is a specimen of what may be termed an inferior or insignificant type of *pa,* the remains of artificial defences now visible being no more than one short trench.

Te Pa-o-Kapo, at Titahi Bay, was also an old stronghold of a similar character. The narrow neck at the base of this small headland was deeply excavated, and on the scarp crest inside this fosse was a stockade, of which several post butts were in position when the writer first visited the place in 1863. In the 'nineties' one of those butts remained, the timber being *totara.* This promontory was an extremely exposed place of residence; probably some form of wind screen was erected on the seaward side.

In Roux's Journal of the voyage of the Mascarin is given some account of the *pa* attacked by the French at the Bay of Islands. This journal is published in vol. II. of McNab's *Historical Records of New Zealand.* The account of the fort is as follows: "It is situated on the extremity of a peninsula which projects into the sea, and is unapproachable on three sides by reason of the precipices which surrounded it. For its better defence it has three rows of palisades. There is also a raised platform all round, which is made of long pieces of wood stuck up on their ends with planks on the top, supported by small poles, strengthened by crossbeams. The natives mount this platform by means of ladders, and on this can fight with much in their favour against an enemy armed in the same way as themselves. To the left there was a little path or track, where one man could pass along at a time by holding on to the palisades with one hand, so as not to fall into the moat. This track was so contrived as to lead to the gateway, which would be about two feet square, and which was the only means by which the village could be entered. This gateway was at the far end of the village; there was no other means of entrance, as the other three sides were washed by the sea.....As they saw our intention was to make ourselves masters of their village, and to pass along the path or track of which I have spoken, they made use of a trick which hampered us greatly: they threw water all along this path, so as to prevent us using it. The ground, which was already very muddy, favoured their design.. .....Upon entering the track, we saw several natives, who ascended the raised platform of which I have spoken, but three or four of them who had got up having been shot the others were deterred from seeking to replace their comrades. The 300 paces which, roughly computed,

FIG. 94.—PARITUTU, A FAMOUS PLACE OF REFUGE, NEAR NEW PLYMOUTH, TARANAKI.
See p. 253. [*Collis, Photo.*

we had to go to reach the gateway were soon traversed despite the spears that were hurled at us. What impeded us most was the water they had thrown on the track.....Having found ourselves in front of the gateway, and there being only the palisades to separate us from the enemy, we commenced a very sharp fire."

Having the advantage of firearms the French were enabled to force the passage of the entrance and enter the fort. Six chiefs were shot as they defended the entrance; after their fall the people lost heart and evacuated the fort. This would be owing to the fact that their mode of defence had become useless. Those who ascended the fighting stages were shot, those who manned the stockades, armed with thrusting spears, would meet a similar fate. A large number was slain as they attempted to escape. The narrator notes that they had defended the entrance to the village for about forty minutes, and with great coolness, for no one could be heard speaking except the chiefs, who gave their orders, and who were always to be seen in the most dangerous places. But immediately the chiefs had been killed the natives displayed as much fear as they had previously exhibited courage so long as the chiefs were at their head, and they now took to flight. He also notes how the natives tried to protect themselves from the bullets by wearing thick closely woven capes, such as were used in spear fighting.

Another remark by this writer is of interest, as showing that a considerable space must have existed between the stockades and the rows of houses. The village was burned by the French:—"The rows of palisades, which were well away from the houses, escaped the fire.....the fighting platform also escaped the fire."

In the Journal of Du Clesmeur, a member of Marion du Fresne's expedition, published in the same volume as the above, appear a few notes on native forts:—"Everything goes to show that these people are warlike. The position of their villages is always carefully chosen. When building their villages they select steep hills, or easily accessible islands. It is quite astonishing to what point of perfection they have arrived in their entrenchments and fortifications. I have seen villages whose approach was defended by moats of 20 ft. in width by 10 ft. in depth, and in which were double and triple palisades, and, in between, a species of raised platform from which spears could be thrown with great effect."

Cliff Forts or Strongholds.

Paritutu.

The high rock column known as Paritutu, 500 ft. in height, near New Plymouth, is a good specimen of a type of stronghold utilised by the Maori, in which they took advantage of a peak or rock pinnacle with vertical or precipitous sides requiring little or no labour in the way of forming defences to make them impregnable. Fig. **94**, p. 252, shows the seaward side of Paritutu.

Paritutu might almost be described as a pinnacle, though it does not run up to a point, there being a very small area of comparatively level aspect on the summit. The only means of ascending this rock is on the landward side where, however, it is very steep, and, in its upper part, easily defended. There are several old food storage pits on the summit and under it. On the south and S.W. sides of its summit several small terraces have been formed by the old time occupants and another on the east side. The summit has been flattened, and this small area and the terraces would accommodate a few huts, probably low-walled ones on account of the very exposed position. The rock is andesitic and much shattered, with some soil on the summit, which is about 50 ft. by 36 ft. in size and irregular in form. Storage pits and caves to the number of about thirty are found round the sides.

From the summit of this stronghold a remarkably fine view is obtained of sea, land and mountain, of the rolling grass lands, homesteads and plantations. The place would not accommodate many people, and would merely be used as a stronghold to retire to in troublous times, as we know some of these rock retreats were occupied early in the last century.

Mikotahi.

The adjacent *pa* of Mikotahi was formerly an island though now connected with the mainland. Its sides are steep but not high, and the summit, partly level and in part a gentle slope, shows an area of about half an acre, possibly somewhat more. See Fig. **95**, p. 255. There is a considerable earth formation and nearly sixty of the *rua kopiha* or well like pit stores are scattered over the summit. There are also said to have been caves or tunnels in the sides that may have been utilised as food storage places, and that possibly were artificial. There is a terrace on the western side. Some of the storage pits show a block of earth left when the excavation was made, probably as a step for the accommodation of those entering and leaving the pit.

The folk who used these strongholds appear to have usually lived on the lower lands just east of them, where their hamlets would be situated.

From these strongholds of Paritutu, Moturoa and Mikotahi doubtless the Maori saw Tasman's queer old ships heading northward, and the coming of the mysterious Tere a Tu-te-paengaroa, whoever they may have been. They saw afar off the followers of the water roads who had broken through the hanging sky, and the coming of the whalers.

In Fig. **95** both Mikotahi and Moturoa are shown, the latter being the conical rocky islet seaward of Mikotahi. Some natives were living on Moturoa in the year 1839.

Of the various *pa* at Nga Motu, Mr. Percy Smith writes:—"The remarkably rocky mount of Pari-tutu forms a landmark for many miles both north and south. It is 506 feet high, and on the top are to be found the signs of fortification; for this was a place of refuge during the warlike incursions that this rich district has so often been subject to. The same remark applies to the two larger islands, Motu-mahanga and Motu-roa, both of which were places of refuge."

In his account of the attack on the Otaka or Nga Motu *pa* in 1832, the same writer says:—"Other *pa* in the vicinity occupied at this time by Atiawa were Mikotahi, Paritutu, Mataora and Motu-o-Tamatea. Great inducements were held out to those on Paritutu to come down and have a friendly dance with Waikato (the attacking force), but the bait was not taken. This fort was well supplied with food, the great trouble was with the water, which was only obtainable halfway down on the south western face, three hundred feet below the summit. Their mode of getting this was as follows: Two, or sometimes four, large calabashes, were fastened over the shoulders of the man or woman told off to descend the cliff; a strong rope was then made fast to the carrier, who also made use of a second stout rope, which was fastened to stakes driven securely into the face of the cliff. By this means they reached the spring, and, after filling the gourds, they returned by the same way. This would be repeated perhaps several times during the night. Those living on, or occupying, the island *pa* of Mataora and Motu-o-Tamatea could prevent any depredation on this spring by the enemy, as it lay quite exposed to, and within easy range of, their musketry fire."

Waimate Pa, South Taranaki Coast.

Of the Wai-mate *pa*, on the Taranaki coast, Dr. Marshall wrote in 1834:—"Wai-mate was built on an insular rock, not unlike Te Namu in its general form, but larger, loftier, and more difficult of access. It was excessively crowded with huts, these being generally disposed in squares, but occasionally so ranged also as to form long narrow streets. Of these huts there were nearly two hundred standing when we entered the *pa*, varying, however, in their form, as it was evident they varied in their uses."

This writer then proceeds to give a good description of the dwelling and other huts found within the *pa*, as also of the food pits with which 'the whole of the ground occupied by the *pa* was honeycombed.'

In speaking of the Wai-mate *pa* as he saw it in 1840, Mr. R. Stokes says:—"The *pa* of Waimate is about half a mile beyond the stream of the same name. At this place, indeed, there are three *pa*, each on a separate cliff about 150 feet high, and close to each other, the names of the other two being Waranui (? Whara-nui) and Orangi-tuapeka, between these two last flows the Kapuni.....The pathway winds up the side of the cliff; about two thirds of the way up a

FIG. 95.—MIKOTAHI PA NEAR NEW PLYMOUTH... MOTUROA ISLET IN MIDDLE DISTANCE.
See p. 254.
[*Collie, Photo*

rude ladder is placed (See Fig. **96** below), made of the trunk of a small tree, with notches cut in it for steps, up which we climbed to the *pa.*" (See also Fig. **97**.)

Of the Otu-matua *pa,* north of the Wai-mate, the same writer says:—"Otu-matua is built on a projecting point between two small bays or indentations of the coast, the more sheltered of them serving as a place where the natives can draw up their fishing canoes on shore. There is

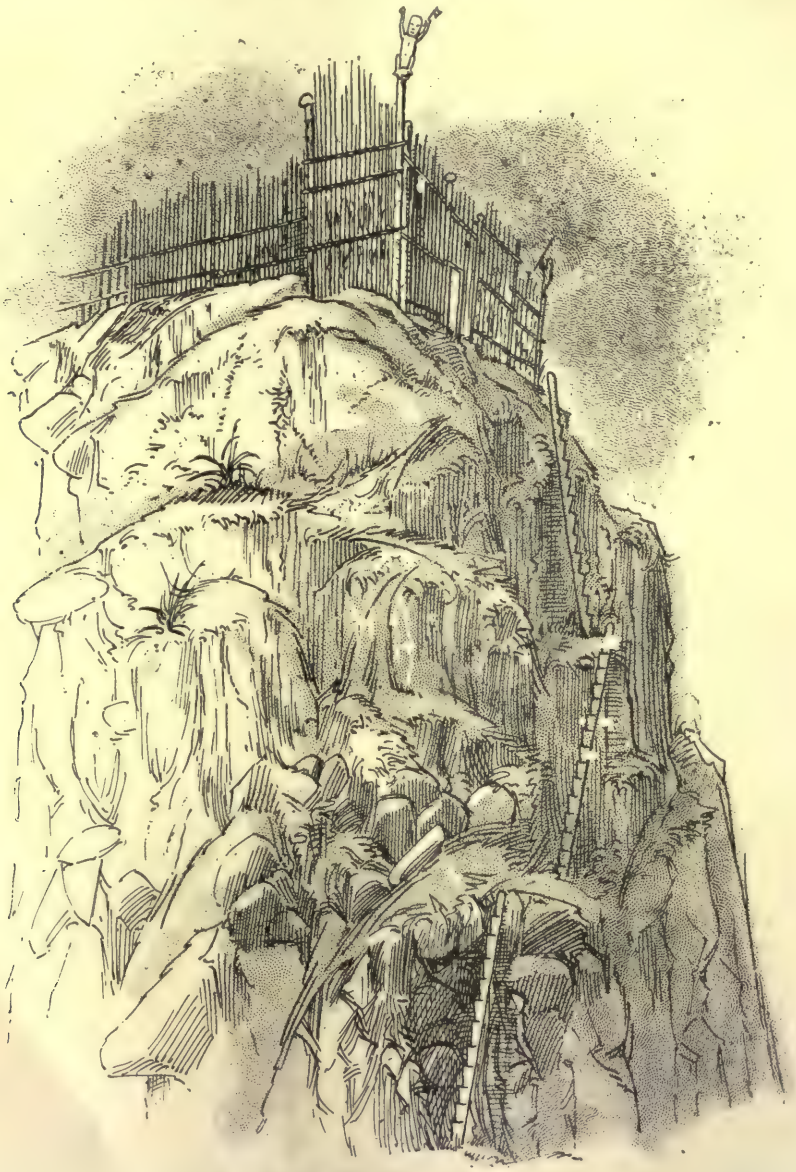


FIG. 96.—WAIMATE PA, AT THE MOUTH OF THE KAPUNI RIVER, TARANAKI.
See p. 254. [*From Maori Art.*

a path down the steep face of the cliff, and half way down a ladder, similar to that described at Wai-mate. The *pa* is of considerable size, with a double fence or enclosure, and a passage three feet wide between. The posts are covered with grotesque representations of the human figure. The number of inhabitants at this *pa,* as far as we could estimate, is about four hundred, with a greater proportion of children than at any other settlement we had visited. They were mostly under the age of twelve years."

[*After Dieffenbach.*

FIG. 97.—ANOTHER VIEW OF WAIMATE PA, MT. EGMONT (8,260 ft.) IN DISTANCE.
See p. 254.

FIG. 98—TE NAMU PA, NEAR OPUNAKE, TARANAKI.
See p. 259.

[Photo by Augustus Hamilton.

The name Waimate seems to have included two cliff strongholds known as Nga Teko and Orangi-tuapeka. The latter is level on the top. These sea cliff *pa* are situated about three miles from the township of Manaia.

In writing of the two *pa* at Waimate taken by the crew of the Alligator in 1834, Mr. Seffern says:—"These *pa* were found to be of formidable appearance. One was on the top of a detached rock about two hundred feet high, and quite inaccessible from all sides, excepting a narrow zigzag path capable of allowing only one person to walk up at a time. This was cut in the rock, and at the top stood a post about twenty feet high, notched with steps. The only entrance to this stronghold was by a hole three or four feet in diameter. The top of this *pa* was fringed by a palisading in which were embrasures for muskets, and in many places a dyke surrounding spots on which were built about two hundred huts, capable of housing a thousand inhabitants. There were about thirty provision rooms, in which were excavated cells which would each hold about fifty tons of potatoes. These provision houses [pits] were entered through a waterproof trap from their cookhouse. They were nearly all full, and as there was an equal supply of dried fish and firewood, it showed how completely these people were prepared against any attack from their neighbours."

A store pit beneath a cooking shed that would contain fifty tons of potatoes was an abnormally large one. Commodious store pits were usually situated outside the defences.

The Aromanga *pa*, situated on the right bank of the Whanga-nui river, about a mile above Tunu-haere and Kai-whaiki, is a good example of the use made by the Maori of wild places difficult of access whereon to locate his fortified hamlets. This *pa*, which was a very small one, is situated on the lower end of a small spur running down from the ridge above to the river, but terminating a short distance from the river in a perpendicular cliff, absolutely non-negotiable with any primitive appliances. This cliff continues also along one side of the *pa*, while the other side falls away very steeply to a small creek, and was easy to fortify and defend. The approach to the *pa* from the river was up the steep slope on the inland side of the stream, along a narrow ledge at the summit of a cliff, then up the creek bed and so on to the spur. The upper end of the *pa* is defended by two deep moats cut across the spur, some little distance apart, which were assuredly supplemented by stockades, as also was the scarped side next the stream. When occupied, this *pa*, situated on the summit of the rugged cliff overlooking the river, must have been an extremely picturesque place. The other noticeable feature in connection with this *pa* is that it is commanded on the inland side by a much higher hill spur, rising steeply from the small creek the high bank of which forms one side of the *pa*. From this hill, stones or spears could certainly have been cast into the *pa* by means of the sling and whip formerly employed by the Maori, and it is not clear how its inhabitants protected themselves under such conditions.

Te Namu Pa, near Opunake, Taranaki.

The following is a description of Te Namu, a famous *pa* situated on the coast about one mile north of Opunake, Taranaki district, wherein a body of the Taranaki tribe, in number about eighty, held their own against a large force of Wai-kato, which was finally compelled to retire from Te Namu and its resolute defenders; as given by Dr. Marshall, who was with the force of soldiers and sailors landed in 1834 from H.M.S. Alligator, in order to rescue Jack Guard's wife and child, captured by the savages when they murdered many of Guard's companions at the wreck of the Harriett, in April, 1834:—"There were only two entrances to the Namu *pa*, and they might have been defended by a dozen resolute individuals against a company of soldiers. One of these entrances being hardly perceptible from the outside; while the ascent to the other was facilitated by a notched stake of wood, which rested upon a perpendicular cliff, facing the stream, whereby the triangular rock on which this *pa* was built is separated from the mainland to the southward. The sea face to this rock is more precipitous than either of those overlooking the land, the escarpment being continued to the beach. The remaining face is towards the inland country (See Fig. **98**, p. 258), with which it is connected at its base by a narrow isthmus

of sand, where the natives had excavated a small harbour for their canoes. On this and the river side of the *pa,* the height of the cliff is lessened from about twenty to thirty feet by a broad band of rich earth, over one half of which were seen traces of a recent conflagration, the effects of an attack on the inhabitants of Te Namu by a hostile body of the Wai-kato tribes, when the latter succeeded in destroying all the huts at the base of the rock, leaving only the burnt ends of the stakes to tell of its having been occupied at all.....Entering the *pa* by an opening in the stockade which runs along the edge of the rock on both sides overlooking the land, whence alone either invaders or assailants were to be expected, we found ourselves in an oblong area, fenced in on all sides. Within this enclosure were two *whare mahana,* warm or dwelling houses, and two *kauta,* cook-houses or kitchens, with several *whata* or stages, supporting baskets of seed potatoes, carefully sewed up with dried grass and covered in with fern leaf; and, smoking over the fires in the kitchens, long strings of dried shell-fish hung in festoons. Another opening, to the right of that by which we had entered, led to an irregular shaped yard, containing a sort of guard-house, open in front, and at once commanding the entrance to the *pa* and the approach to this yard, from which direct communication could be held with all the principal divisions of the place.

"The interior of a New Zealand *pa* is too intricate to admit of a description at once particular and intelligible; and upon the one at Te Namu I shall only further observe that, while necessarily compact from the narrow limits within which it needed to be confined, the most had been made of the space allotted for building that could be made, so as to combine the advantages of a fortified town, security and defence; with the comforts of a country village, detached residence and separate garden grounds.

"The entire space inclosed was divided into fourteen lesser inclosures, each the dominion of a subordinate chief, while all were subject to the command of one superior. And in all the inhabited inclosures, patches of ground were hedged or fenced in.....as culinary gardens. Over the only two sides by which it was practicable to escalade the fortress, the inmates had raised projecting stages, from the front of which an inclined plane had been formed, serving as a breastwork for the defenders, and helping materially to repel their assailants."

In *The Maori History of the Taranaki Coast,* at p. 501 may be found a good description of the attack made by the Waikato natives on Te Namu in 1833.

Of the class of *pa* built on high, steep sided rocks or buttes, that known as Pohatu-roa, at Atiamuri, is a good specimen See Fig. **99**, p. 261. Such a place would be exceedingly difficult to take, if not actually impregnable in pre-gun days, except by a long siege, as lack of water was the weak point in many such places. They were sometimes taken by means of some act of treachery, a not unusual thing in Maori warfare. There is another *pa* named Pohatu-roa, or Lofty Rock, near Te Reinga, inland of Te Wai-roa, H.B., that was taken by a force of Nga-puhi, Tuhoe, and other tribes, in 1826, after much strenuous effort. This *pa* was the top of an isolated rock difficult of access, the edges of the summit being surrounded by a wall of earth and stones bound with layers of fern. Of this fight, Mr. Smith writes:—"In one place there was a cave some distance below the summit, access to which was only obtainable by a very narrow ledge on the cliff.....Some of Nga-puhi managed, by great exertions, to secure a footing above this cave, and there constructed a kind of large basket of supplejack and the tough leaves of *toi* (*Cordyline indivisa*), which they lowered down in front of the cave with some men in it, thinking to be able to shoot the inmates of the cave, but, before they could use their firearms, the cave dwellers, by the use of long *huata* spears, killed several of them, thus causing Nga-puhi to abandon their scheme."

Presumably one of the most inaccessible of old *pa* was that of Maunga-raho, at Northern Wai-roa, an illustration of which appears in vol. 20 of the Polynesian Journal. See Fig. **100**, p. 262.

A famous old fort on the top of a high hill named Taratara, inland of Whangaroa, is said to have been practically inaccessible to enemies, for access to it could only be gained by means of ladders. Such places possessed but little in the way of artificial defences, they were natural

FIG. 99.—THE STRONGHOLD OF POHATU-ROA AT ATIAMURI. [*Photo by T. Pringle.*

See p. 260.

strongholds. Of such a *pa* or refuge at Whangaroa Captain Cruise wrote in 1820:—"Its site is an insulated rock 300 ft. high, excessively steep and in some places perpendicular." See Fig. **101**, p. 263.

In the account of the cutting off of the brig Hawes or Haweis at Whakatane in 1829, is a brief passage referring to one of the cliff forts at that place. It is as follows:—"This pah, like all the others I have seen in New Zealand, is situated on a steep lofty and conical hill of great natural strength, fortified by an embankment of earth, approached by a narrow and circular pathway, so difficult that an European climbs it with much danger, while the bare-footed New Zealander ascends without inconvenience, running over the sharpest rocks and most rugged ways with great facility."

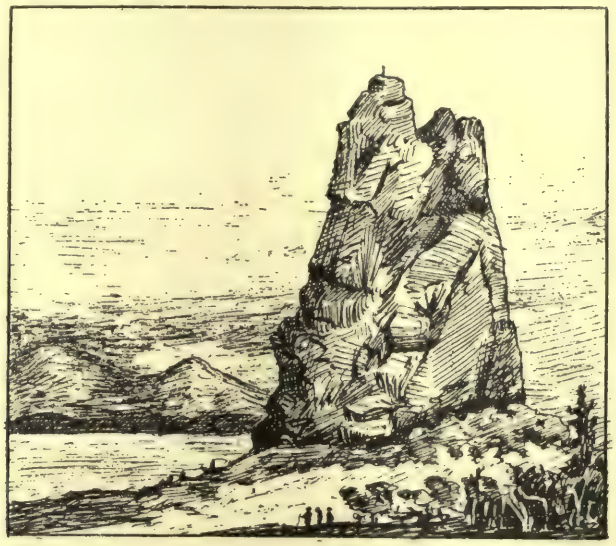


FIG. 100.—MAUNGA-RAHO.
A remarkable place of refuge at Northern Wairoa, North Auckland.
[*From Journal of the Polynesian Society, Vol. 20, p. 84.*
See p. 260.

A cliff *pa* was seen and described by Mr. A. Hamilton in 1879. It was situated near one of the old Armed Constabulary redoubts at Tarawera, on the Napier-Taupo road. He describes the *pa* as being situated on "a level piece of ground in the form of a peninsula, the sides of which are almost inaccessible precipices. Across the narrowest part is a deep ditch and two high banks, a double vallum and fosse, beyond which were holes and fragments of timber showing that round the whole of the enclosed and defended area had been a high and strong stockade, many of the posts of which still remain. The area of the stockaded part is probably two acres."

He also remarks that hut sites were seen within the *pa,* as also a great many store pits of the *rua kopiha* type, circular, well like pits with dome shaped roofs, and about ten feet in diameter. These pits were small at the top, just large enough to admit a person, and surrounded by slabs of *totara,* with pieces for covers. Coffins and human bones were found in some of these pits, showing that the *pa* had been used as a burial place since it was abandoned.

In Fig. **102**, p. 264, is seen the site of an old time cliff fort on the western shore of Lake Taupo. Many of these strongholds must have been very picturesque places when occupied, with stockades along all weak points, and the rude huts of barbaric man in evidence.

A good specimen of a hill top *pa* with a vertical cliff serving as a defence on one side is the old Rangatira hill fort, on the left bank of the Waipaoa river, about 20 miles inland from Gisborne. See Fig. **103**, p. 265. The fortified summit is almost level and in area is about 75 yds. by 25 yds. The side facing the river is a perpendicular cliff, and the other sides are

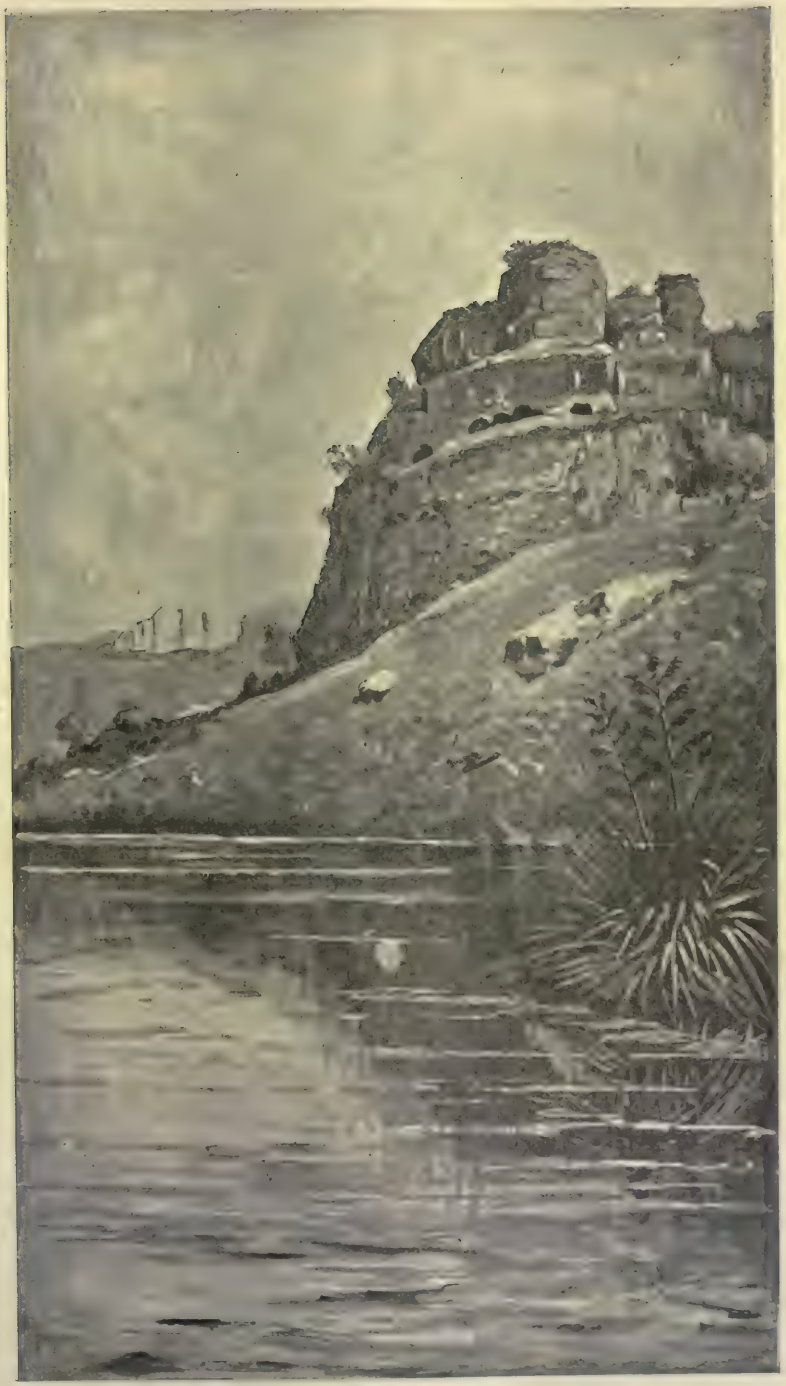


Fig. 101.—A Cliff Stronghold of olden times at Whangaroa.

See p. 262. *[From a painting by Colonel Boscawen.*

FIG. 102.—SITE OF A CLIFF FORT OF OLDEN DAYS ON THE WESTERN SHORE OF LAKE TAUPO.

See p. 262.

[*J. McDonald, Photo.*

protected by scarp, rampart and fosse. On these latter sides a lower terrace has been formed that is now from 5 yds. to 8 yds. wide, part of which is provided with an earthwork rampart along its outer edge. The upper area shows hut sites and apparently pits for the storage of food supplies. The view from this stronghold is a fine one, embracing the Waipaoa and Wai-

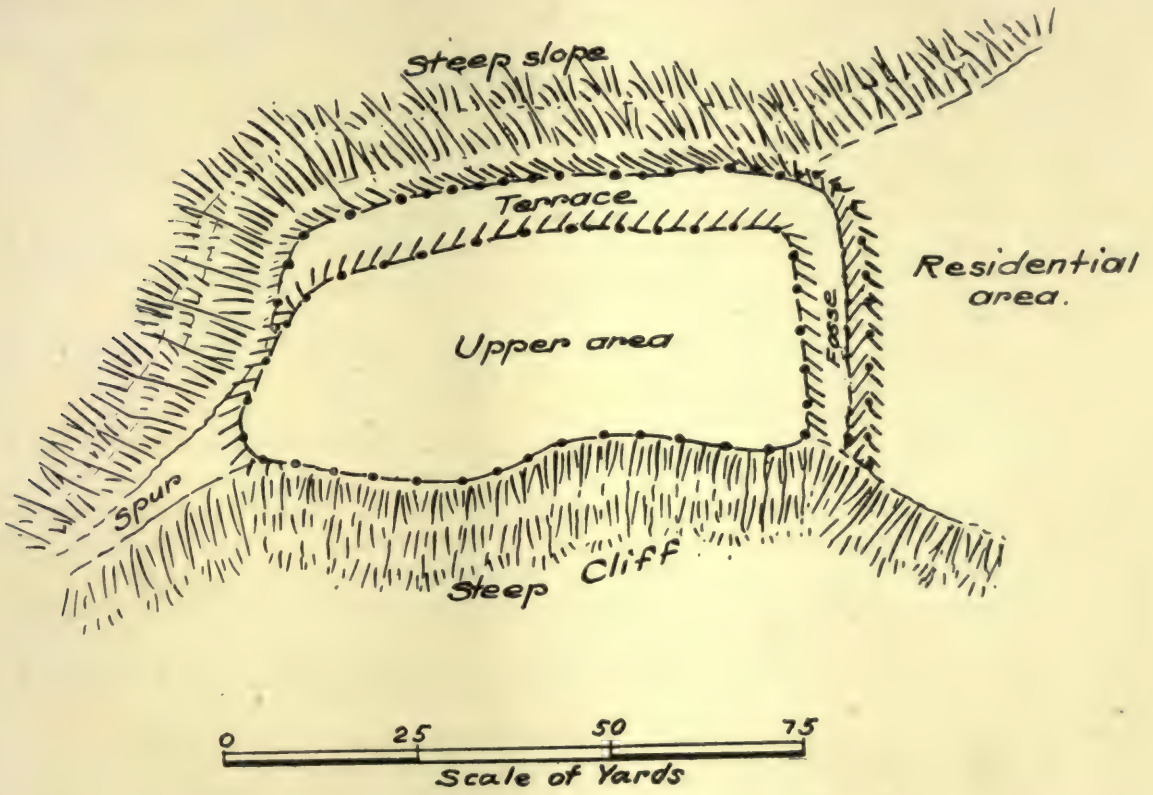


FIG. 103.—THE RANGATIRA PA, WAIPAOA RIVER, GISBORNE DISTRICT. [*Miss E. Richardson.*

See p. 262.

kohu valleys. An outer area, lacking any earthworks, has been used apparently as a residential area. The scarp at one end of the *pa* has a fosse at its base, and on the outer side of the fosse are the eroded remains of an earthen rampart, now about 4 ft. in height at its highest point.

ISLAND FORTS.

Numerous island *pa*, or fortified islets and refuges, were seen by early visitors to New Zealand and others have been noted of the occupation of which we have no information. In some cases artificial islets were made in lakes, lagoons and swamps, and used as refuges, as at Muhunoa, Horowhenua and Te Hurepo. The following extract from *The Maoris of New Zealand* will show a method of forming such islets, as practised at Horowhenua lake: Six of these places were constructed, the names being, Karapu, Te Namu-iti (both at the north end of the lake), Wai-kiekie, Te Roha-a-te-Kawau (near the Hokio stream), Wai-pata and Puke-iti. "The waters of the lake are nowhere more than twenty to twenty-five feet in depth.....Most of the islands are in shallow water, not more than six or seven feet in depth. They are now luxuriant tangles of *raupo, toetoe,* flax [*Phormium*], and shrubbery; one or two of the southern ones are mere dots of flax clumps, with here and there an ancient palisade post. In building them, as the late Rangi-mairehau, of Horo-whenua, described to me, the Mua-upoko [the natives who constructed them] first of all drove down lines of strong stakes in the lake bed, making large circular fences. Then tussocks, flax, *raupo* [bulrushes], etc., were brought in canoes and pressed down

over the sharp-pointed stakes, so as to form a wall; and baskets upon baskets of earth from the shore were emptied within the enclosure, until the islands were made. Inside the encircling fence more saplings and stakes were driven down into the soil, and others crossed upon them, and, as the ground grew solid, huts were built thereon, and strong lines of stockades were built round all. The approaches to the islands, all of which are close to the mainland, were defended by a series of marine *chevaux-de-frise*—rows of sharp stakes driven down until their points were just below the surface of the water, in such positions as to offer serious obstruction to canoeists who were not acquainted with the intricate channels."

A native described to Sir W. Buller the process employed in constructing the artificial islet in the Muhunoa lake, in Horowhenua County:—"First of all poles were driven in to define the extent of the proposed island. Then great lumps of 'negrohead' were brought from the shore and cast into the water within the lines of the poles, and this was continued until a mound was formed level with the surface of the water. Then great quantities of refuse shells were brought and cast upon the surface, then soil, many canoe loads, was thrown on top, etc."

In the Dominion Museum is a sketch of the Horowhenua lake showing the six islets; this was the work of the Rev. R. Taylor, who was the first to describe these artificial islets. See *Transactions of the New Zealand Institute,* vol. 5, p. 101.

At the *pa* on Mokoia island, at Rotorua, it is on record that fences were continued out into the waters of the lake so as to enclose the canoes within them, as was done at the Mawe *pa* at Omapere.

D'Urville, who sailed up the East Coast in 1827, states that Bare Island [Motu-o-kura] was scarped and occupied as a *pa*:—"It is an escarped rock, naked, and a mile or more from the land. A *pa* or fortress of some size occupies the summit, and ought to be an impregnable position. There were also to be seen several houses on the slopes of the isle, and by aid of the glass we easily distinguished the inhabitants moving about their fortress, and occupied in regarding attentively our passing. As at other points of the coast they made some great fires to call our attention."

There was a partially artificial island *pa* in Tutira lake named Tauranga-koau. It was used as a place of refuge.

The *pa* known as Te Pakake was situated on an island in the harbour at Ahuriri, Napier. A native account of it states that it could be reached at low water, by a sandbank stretching out from the east side of the harbour. In 1824 this *pa* was taken by northern raiders with considerable slaughter. The assaulting force is said to have reached the *pa* on rafts made of *raupo,* but why it should do so when the *pa* was approachable on foot at low water is not stated.

The islet on which Te Pakake *pa* was constructed was known as Motu-kura; it was near the Spit and one account refers to it as an artificial islet. This is probably the place mentioned in the report of the late Captain W. B. Rhodes on McDonnell Inlet (the Inner Harbour at Napier), written in the 'forties' of last century. Somes Island, in Wellington Harbour, bears the signs of two old *pa,* one of which had on one face an outward leaning stockade (*matahao*). An article in the New Zealand Journal of 1840, p. 233, seems to show that the stockades were then still standing. Ward Island was also used as a refuge in olden times.

On November 15th, 1769, Captain Cook landed on a small island off the south head of Mercury Bay, of which he says:—"The island we landed upon was very small, yet there were upon it a village, the inhabitants of which received us very friendly. This little village was laid out in small oblong squares, and each palisaded round. The island afforded no fresh water, and was only accessible on one side. From this I concluded that it was not chose for any conveniency it could afford them, but for its natural strength."

Banks describes a *pa* seen at Mercury Bay as follows:—"We all went ashore to see an Indian fort.....and landed first near a small one, the most beautiful romantic thing I ever saw. It was built on a small rock detached from the main, and surrounded at high water; the top of this was fenced round with rails after their manner, but was not large enough to contain above five

or six houses; the whole appeared totally inaccessible to any animal who was not furnished with wings, indeed, it was only approachable by one very narrow and steep path."

In his account of the Bay of Islands, Captain Cook writes:—"We came at last to a little fort, built upon a small rock, which at high water was surrounded by the sea, and accessible only by a ladder.....The ladder consisted of steps fastened to a pole, but we found the ascent both difficult and dangerous.....We examined the house.....and two others, which were all that the fortification contained."

Cook also visited a small stronghold on a rocky islet in Queen Charlotte Sound:—"On the 24th [January, 1770] we went to visit our friends at the Hippah [corruption of *he pa* = a fortified village].....The island or rock on which the town is situated, is divided from the main by a breach or fissure so narrow that a man might almost leap from one to another: the sides of it are everywhere so steep as to render the artificial fortification of these people almost unnecessary: there was, however, one slight palisade, and one small fighting stage, towards that part of the rock where access was least difficult."

On January 26th, Cook visited another such place in the same Sound:—"We went to the town of which the Indians had told us:.....this, like that which we had seen before, was built upon a small island or rock, so difficult of access that we gratified our curiosity at the risk of our necks.....This town, like the other, consisted of between eighty and a hundred houses, and had only one fighting stage."

In a general description of Queen Charlotte Sound, Cook remarks:—"The number of inhabitants scarcely exceeds four hundred, and they live dispersed along the shores, where their food, consisting of fish and fern roots, is most easily procured; for we saw no cultivated ground. Upon any appearance of danger they retire to their Hippahs [*pa*] or forts."

An island stronghold at Queen Charlotte Sound is mentioned in Bayly's Journal of the voyage of the Adventure (Cook's second voyage), as published in McNab's *Historical Records of New Zealand,* vol. II., p. 207:—

"April 17th, 1773.—I went ashore on a small island called the Hippa by the natives, which I named Observatory Island. It is a rock whose sides are perpendicular in many places, and indeed the whole was well fortified by nature, there being only one landing place and the passage up from it exceeding difficult.....On the top of this small island was a town consisting of 33 houses. The most elevated part was tolerably level for about 100 yds. long and 8 yds. or 10 yds. wide. This was fortified with strong posts or sticks drove into the ground and those interwoven with long sticks in a horizontal direction and then filled with small brushwood with one place two feet square where was a wooden dore, so that only one man could get in at a time and that on his hands and knees, and of course easy destroy'd if at war."

The remarks about the small size of the 'dore' or entrance corroborate statements made by other early writers. The fact that timbers horizontally laid seem to have taken the place of vertical palisades has not been noted elsewhere. Doubtless this arrangement was due to the difficulty of inserting palisades in the ground, owing to its rocky nature. We see native fences of this style still in use.

Of Pa-tangata, an island *pa* at Tonga-porutu, Mr. Percy Smith writes:—"Pa-tangata is an island at high water, standing about 200 yards off the line of cliffs forming the shore. Its sides rise sheer to a height of from seventy to eighty feet, making it practically impregnable in the days before firearms were introduced."

The three islands of Tapu-tē-ranga, (Watchman Isle), Te Iho-o-te Rei and Koparapara, in the inner harbour at Napier were occupied by the natives in former times. but we have no information as to their being fortified. Quite probably stockades were employed.

The islet at Island Bay, Wellington, was used as a refuge. It was called Tapu-tē-ranga by the natives, named after Watchman Isle in Napier Harbour.

Occasionally strongholds were formed on mounds almost entirely surrounded by impassable or difficult swamps.

After Te Rangi-haeata was driven out of the Pori-rua district, and disappointed in his desire to wipe off the map the young settlement of Wellington, he sullenly retired up the coast and built a *pa* on a mound situated among swamps near Levin, the only approach to which was along a narrow strip of dry land running out into the swamps. The Rev. R. Taylor, who visited the place, thus describes it:—"The *pa* was on a mound, the only one in the vicinity, and strongly fortified in the native style with thick lofty posts deeply sunk in the ground, and bound together with a *huahua,* or connecting pole, running round at the height of about ten feet from the ground. Inside the outer fence was another, behind which the defenders could post themselves and take aim through the outer one. The *pa* was divided into a number of small courts, each equally well defended, and connected by very narrow passages."

Mr. John White mentions the case of a clan of very inferior numbers which, on being assailed by the powerful Ngapuhi tribe 'built a *pa* on long posts in the midst of a deep swamp and there defied the attacks of their foes.' This must have been such a platform hamlet as those of Switzerland and western Europe in former times, and those of New Guinea and other places. *Pa* seems to be a misnomer in such a case as the above.

An artificial island formed in a lagoon or swamp at Te Hurepo, Whakatane valley, centuries ago, still exists as a low mound in a grassed paddock. Butts of stockade posts were found in it when the land was ploughed.

In vol. 5 of White's *Ancient History of the Maori,* is some account of a so called *pa* constructed in a tree top; this appears to have been merely a tree dwelling that could be defended by means of stones, etc. In vol. II. of the *Journal of the Polynesian Society* is a description of another such tree dwelling at Whakahoro, Otaki district; this became untenable on the introduction of firearms. The Rev. R. Taylor mentions a tradition of a similar refuge at the base of Mt. Egmont, and another in the Opotiki district is mentioned by Polack.

FIG. 104.—AN ISLET REFUGE AT TOLAGA BAY.

Such places are described at pp. 266-267.

[*From Cook's Voyages.*

FIG. 105.—INTERIOR OF TE PUTIKI PA AT WHANGANUI, AS IT APPEARS IN GILFILLAN'S FAMED PAINTING.
See p. 273.

Part V.

THE MODERN PA MAORI.

ILLUSTRATING CHANGES MADE BY THE MAORI IN HIS DEFENSIVE WORKS AFTER THE INTRODUCTION OF FIREARMS.

CONTENTS.

The Maori an adept at adaptation. Use of cannon leads to disuse of heavy stockades. Notes from Tuta Nihoniho. Darwin's remarks. The *pa* of Hongi. French account of a fort at Kawakawa. Waitahanui at Taupo. Descriptions of modern fortified villages. Wellington district. Ohangai, near Hawera. Commanding hills cause evacuation of old forts. Casemates, ravelins, traverses and rifle pits introduced. Orangi-tuapeka. The Matai-taua *pa* at Paua-tahanui. Puke-kakariki. Orongo-mahanga. Stockades blinded with flax. Onawe at Akaroa. Kaiapoi. Te Teko. Mauinaina. Stages built to command *pa*. Hikurangi on the Whanganui. Keke-paraoa at Poverty Bay. Many old forts well preserved. Pa-toka. Te Weraroa at Wai-totara. Tihoi at Whenua-kura. *Pa* at Nelson. Okaihau at Lake Omapere. Ohaeawai. Rua-pekapeka. Report on Maori forts. Use of casemates. The Gate *pa*. Rangiriri. British troops repulsed. Otapawa. Moturoa. Tauranga-ika. Entrance to *pa*, how blocked. Okotuku. Pipitea village at Wellington. Nga Tapa at Poverty Bay. Rifle pits at Whakatane. Fighting stages at the Chatham Isles.

After the acquisition of firearms by the Maori people, those astute warriors soon found that some change must be made in their system of fortification and methods of fighting. The statement sometimes made, however, that firearms 'struck a fatal blow at the whole system of Maori tactics' is entirely wrong; they simply caused the Maori to make some changes in his fortified places and mode of conducting a fight.

In his *Old New Zealand*, Maning remark:—"Now when the natives became generally armed with the musket, they at once abandoned the hills, and, to save themselves the great labour and inconvenience occasioned by the necessity of continually carrying provisions, fuel, and water to these precipitous hill castles; which would be also, as a matter of necessity, at some inconvenient distance from at least some part of the extensive cultivations—descended to the low lands, and there, in the centre of the cultivations, erected a new kind of fortification adapted to the capabilities of the new weapon."

Colonel Gudgeon has written as follows:—"The Maori was a past master in the art of fortification.....The aptitude of the Maori for all sorts of warfare.....has never been made so manifest as by the modifications introduced into their system of fortification in order to neutralise the crushing effect of our heavy guns.....In place of using the massive hardwood posts which formed the ordinary palisades of Heke's war of 1845, only light tough rods were used in the later wars, each one tied independently to the supporting beam, so that if cut in two by a shot it should not involve the fall of other parts of the work. These light timbers were specially designed to minimise the chief danger of artillery fire, *viz.*, splinters, the effects of which the Maoris had not failed to notice. This was but one of many innovations introduced by the Maoris in order to meet the improved conditions of modern warfare, and since that period they have, as a rule, regarded the big guns with more or less contempt.....The Maori discovered that the big gun does not kill so many men as it frightens, and for this reason they feared only our rifles."

Again, the Rev. J. Buller tells us:—"Their forts, or *pa*, were built on lofty hills, always securing a retreat by wood or water. They surrounded them with strong stockades and deep

trenches.....Stockades were also erected in the valleys and plains: they consisted of irregular lines of poles from twenty to thirty feet high, and six to twelve inches in diameter. A lighter fence, from six to eight feet high, was outside this. Between the two there was a ditch. At every corner there was a quadrangle from which to rake the besiegers.....Since firearms have been known to them, they defend their *pa* from a number of rifle pits. The huts inside are covered over with earth and clay, making them musket proof. The consummate skill shown by them in the construction of their rude forts astonished our military engineers."

The quadrangles or bastions above mentioned were not a feature of the *pa* of pre-European days.

A military officer writes as follows anent the aptitude of the Maori for altering the defensive works of his fortified places to suit modern warfare:—"As time went on they improved their methods immensely in order to cope with our guns and rifles, until at last many a *pa* constructed on a plain, in fairly open country, Orakau for instance, was so ingeniously designed as to be what the Germans call *sturmfrei,* so that it could only be captured by a heavy bombardment, by mining, or blockade. At Orakau there were three determined assaults gallantly led, these were repulsed in succession, and other methods of attack had to be resorted to."

The Modern Gun-fighter's Pa.

(From Notes supplied by the late Tuta Nihoniho.)

The introduction of firearms into New Zealand was soon followed by a change in the native methods of warfare and fortification. This was a necessary and inevitable result of the acquisition of missile weapons of precision. In pre-European days the missile weapons of the Maori were of an exceedingly primitive and short-flight nature, hence the fighting was practically a hand to hand business. A man might stand a hundred feet away from a besieged *pa* and do so in safety. Men stood on elevated stages to defend a hamlet. All this was altered when muskets were obtained. The advent of the flint lock musket put a stop to primitive methods of fighting, and firearms gradually forced the old native weapons out of the field. The days of the old time *rakau maori* (native weapons) were numbered, the fierce charge of the Ika a Whiro was seen no more, the gun fighter had arrived upon the scene.

One change that was soon made in regard to the *pa maori,* or native fort, after the introduction of guns, was that in many cases the people moved down from the hills to the flat land, abandoned their hill forts and constructed new ones on level ground, often on the brink of a stream or river, thus lessening the chance of having any trouble over the water supply. The reason given for the above change of location is that a hill *pa* was more easily approached by an enemy than one situated on a flat. The hill formation afforded cover to a hostile party enabling it to approach and, in some cases, to dominate the fortress, facilities that were not vouchsafed it on level land. In approaching the latter type of fortified hamlet, no cover in many cases, was obtainable, and thus the garrison had the advantage over their assailants.

The modern gun fighting *pa* had, as a rule, but two stockades or rather one true stockade and an outer screen, nor were the timbers of the stockade, in many cases, so large in the modern *pa.* The *kiri tangata,* or innermost stockade, was no longer needed, and was dispensed with. A trench was made inside the stockade, as a place of shelter for the gun fighters. The outer screen of the *aparua* was usually wholly detached and vertical, a light stockade or fence erected about thirty inches in front of the main stockade so that the old-fashioned long-barrelled muskets thrust through the uprights of the main fence, and under the screen, often projected beyond and outside the latter. The defenders crouched in the ditch, and, having fired, could duck down and reload their pieces in safety. The bottom of the pickets of the outer screen did not reach the ground by about a foot or eighteen inches.

The earthwork of a modern *pa* was utilised as we sometimes use ours; the defenders were stationed on the banquette and fired over the top of the parapet. Loopholes for firing through

were sometimes made by placing two rows of sand bags on the top of the parapet, the first layer a little way apart, to form the loophole, the next row close together, and breaking joints over the first row. This usage was borrowed from Europeans. Bags about three feet long, woven of green *Phormium* leaves were used for this purpose.

Modern earthworks are often alluded to as *parepare,* more especially the smaller ones, such as a short one in front and outside of the entrance to a *pa,* as a protection for the gateway, a form of ravelin. Small detached earthworks were also erected in other suitable places as outworks.

Another new feature in the modern *pa* was the flanking angle, called *pukoro.* A common form of flanking angle on the East Coast was the enclosure of a small space at an angle of the *pa* by means of a stockade or palisading. Along the middle of this enclosure, extending from the angle of the *pa* to within a few feet of the outer fence, was an earthwork wall about five feet high. Between this wall and the palisade, all round,was a trench about five feet deep, in which the gun fighters stood to fire through the palisades. The trench was continued under the defences of the *pa* to its interior, so that persons might pass to and fro through a kind of subway below the stockade and earthwork. There were no *niho* or *kotikoti, i.e.,* traverses, left in the ditch of this bastion work, as such were not needed, and might serve to shelter an enemy if he gained admittance to the work.

The palisades of the modern *pa* were somewhat wider spaced than in the pre-European fortified places.

In many cases where the inmates of a *pa,* such as non-combatants, might be in danger from the fire of an attacking party, and in cases where cannon were employed against them by Europeans, subterranean chambers to serve as shelters and dwelling places were excavated, and covered with low pitched roofs covered deeply with earth. A similar form of dwelling pit was occasionally seen in a *pa* in pre-European times, the object being to obtain warmth.

Sentries in a modern *pa* were stationed at suitable places, and usually remained silent; in some cases a man was appointed as a chanter of *koko,* or watch songs, though it does not appear that he actually performed the duties of a sentry. Other and minor changes were made in the *pa maori* on the introduction of firearms and European customs.

The best village scene of Maori life that we have is an interior view of the Putiki *pa,* a stockaded village at Whanganui, the work of Mr. Gilfillan in the early 'forties' of last century. It will be noted that some European features appear in the scene, *viz.,* blankets, shirts, an iron pot, a cap, the game of draughts, and a young pig being nursed by a woman. See Fig. **105**, p. 270.

Darwin gives us the following brief note on Maori forts:—"I was surprised to find that almost every hill I ascended, had been at some former time more or less fortified. The summits were cut into steps or successive terraces, and frequently they had been protected by deep trenches. I afterwards observed that the principal hills inland in like manner showed an artificial outline.....That these *pa* had formerly been much used was evident from the piles of shells, and the pits in which, as I was informed, sweet potatoes used to be kept as a reserve. As there was no water on these hills, the defenders could never have anticipated a long siege, but only a hurried attack for plunder, against which the successive terraces would have afforded good protection. The general introduction of firearms has changed the whole system of warfare; and an exposed situation on the top of a hill is now worse than useless. The *pa* in consequence are, at the present day, always built on a level piece of ground. They consist of a double stockade of thick and tall posts, placed in a zigzag line, so that every part can be flanked. Within the stockade a mound of earth is thrown up, behind which the defenders can rest in safety, or use their firearms over it. On the level of the ground little archways sometimes pass through this breastwork, by which means the defenders can crawl out to the stockade to reconnoitre their enemies. The Rev. W. Williams, who gave me this account, added that in one *pa* he had noticed spurs or buttresses projecting on the inner and protected side of

the mound of earth. On asking the chief the use of them, he replied that, if two or three of his men were shot, their neighbours would not see the bodies, and so be discouraged.

"These *pa* are considered by the New Zealanders as very perfect means of defence; for the attacking force is never so well disciplined as to rush in a body to the stockade, cut it down, and effect their entry. When a tribe goes to war, the chief cannot order one party to go here and another there, but every one fights in the manner which best pleases himself."

In describing his visit to Kaipara in 1820, the Rev. Mr. Marsden says:—"We passed a *pa* on a commanding spot, but the chief told us it now afforded them no protection against their enemies since firearms had been introduced. He showed us where their enemies had fired into them with ball, and the distance was too great for them to throw their spears."

The Rev. G. Clarke speaks of Kororipo, the *pa* of Hongi, as being a perfect network of pits and palisaded ways inside. He also writes:—"Let me try and give you some idea of this Maori fortress, as I knew it in its strength. It was a double stockade of upright posts from fifteen to eighteen feet high, with a chain of pits between the two fences, and another chain of pits inside the second of them. The posts at the angles, and at certain intermediate distances, were, in fact, logs about two feet in diameter, the intervals being split logs, and they were surmounted by grotesque and carved hideous human figures, mostly head, with goggle eyes and protruding tongues, all looking outward as if in defiance of any hostile approach."

In the account of the voyage of the French frigate Venus in 1836-39 appears the following description of a *pa* at Kawakawa, Bay of Islands district:—"The *pa* of Kawakawa is situated on a rise of average height and buttresses itself on the side of a high mountain cut steeply, and surrounded on all other sides by a swamp and by the course of the Kawakawa river. In addition it is strengthened by a high stockade about four or five metres high, the palisades of which are very close together, merely leaving spaces between them to serve as loopholes; the palisades are of unequal heights. From point to point, but more especially at the angles of the *pa,* there are posts of much greater size than the others, of these the tops are so carved as to represent heads, to which they have given the most terrible expression that one could possibly imagine. All of them had their mouths open, and tongues thrust out to an inordinate length, while still others among them seemed to be gnashing their teeth. The teeth and the eyes are formed of pieces of shell, the tongues are coloured red, and some of the heads are also of the same colour. Others of the heads are painted in many colours and are tattooed in imitation of those of the natives. They have not been satisfied with representing on these posts the heads only, here and there they have carved the whole figure of personages to whom they have given the most enormous and grotesque figures, in order to answer the purpose of terrifying scarecrows. In case of war with another tribe, these figures received from the people in the *pa,* as evidence of contempt, and as a means of insult, the names of the most notable chiefs on the side of the enemy.

"Immediately on the inside of the stockade of the Kawakawa *pa,* and at special angles, the trenches took the form of covered paths; the besieged stationed in them would find themselves almost entirely safe, because the stockades were further strengthened at the bottom to about the height of a metre at that place. In brief this kind of native fortification, though not constructed after any rules of art, was nevertheless planned for defence with remarkable cleverness. The strong angles were intentionally formed so as to project outside the line of the enclosure, which was of great assistance in the defence of the stockades, and much in the same way as, in regular fortifications, the bastions defend and protect the curtains.

"There was no gateway by which to enter the *pa,* but at an angle was a moveable post which they raised by day and replaced by night, thus allowing a narrow passage by which we entered by means of a pile that served as a step. As soon as we entered the *pa* we found ourselves as it were in a labyrinth. We followed a narrow and winding path squeezed between two palings, for each house is surrounded by its own special paling, lower in height and less substantial than those of the general enclosure, and enclosing paths extremely narrow and difficult.

The general aspect of the village is peculiar but little pleasing, and the curious feature is the construction of the houses."

In these covered trenches and projecting angles we see the effect of the introduction of fire-arms. The narrow entrance passage blocked by means of a movable post illustrates one of several methods of closing such passages.

Of the Waitaha-nui *pa,* at Taupo, Wakefield, who visited it in 1841, remarks:—"On this bank [between swamp and lake] is built a very strong *pa,* called Waitaha-nui. Across the eastern end of the bank, a strong double fence, 15 ft. high, runs from the swamp to the lake, and a like fence protects the western point. In the *pa* are the finest native houses that I have yet seen.....There was no one in the *pa* on the occasion of my visit, and the fences were ruinous in many places, but they talked of renovating the fortification.....to provide against an apprehended invasion from Wai-kato.....The whole force of Waitaha-nui amounts to little more than 400 fighting men.....The pa is 500 yds. long and 100 yds. broad, and is used as a city of refuge by all the inhabitants of Taupo and Roto-a-ira. Each division of the tribe has its own separate quarters."

Of this same place, Dieffenbach wrote that the stockade extended about half a mile along the banks of the lake:—"The village, although full of well constructed native houses, had no inhabitants, as it was a *pa* used only as a place for the tribe to assemble in in times of war. I had leisure to examine it, and found most of the houses ornamented with carvings, and containing the usual domestic utensils of the proprietors. In some boxes which stood upon poles were the bones of children and adults. In the vestibule of one of the houses I found the head of a young girl in a basket, prepared in the manner which has long been so well known..... The high posts which surrounded this *pa* were carved at the tops with human figures in a defying position."

Of a *pa* at Te Puna, Bay of Islands, Dr. Marshall wrote as follows in 1834:—"This *pa*.. .....is in comparative disuse at present, and, consequently, out of repair. It covers the whole top of the hill, and is composed of a series of circles, surrounding one another, and mutually protecting the several enclosures, which they fence in by a high stockade, the stakes being about twelve feet from the ground: Each of these fences or stockades requiring to be separately scaled or the whole to be successively thrown down, before the capitol or inner circle could be gained by an enemy, who at every accessible point would be commanded by the defending party, and exposed to an increasing risk at every advance."

In his report on the Wellington district of November, 1841, Mr. Halswell says:—"The native *pa,* the crying evil, are a mass of filth and vermin; disease, in various shapes, always prevails. There is.....a distressing cutaneous disease.....and as long as they herd together in these wretched holes, it will be next to impossible to eradicate it." He speaks of the Pito-one *pa* as a 'loathsome place.' Several early writers speak of the dirtiness and slovenly appearance of the native hamlets in the Wellington district in the 'forties.' These natives were apparently inferior to those who preceded them in this district in such respects. Cook speaks of the superiority of natives of this district over those of Queen Charlotte Sound, where he saw some visitors from this side. These latter folk were later expelled from this district.

It is a noteworthy fact that the Maori was, as a rule, more particular in regard to his surroundings in former times than he has been of later years. His villages were usually kept in a much neater and more cleanly state, his cultivations were marvels of neatness, and he paid more attention to sanitation than he does now. Writers such as Colenso and Nicholas have drawn special attention to these facts.

"Not far from Te Ruaki (a *pa* three miles E.N.E. of Hawera) is another old *pa,* named Ohangai, which, when I stayed there in 1858, was fully fortified in the old fashioned way with ramparts, fosse, etc., besides being palisaded with great posts, many of them carved in the usual manner with grotesque heads. A large number of people were then living there, who kept the place beautifully clean and neat. It was surrounded by *karaka* groves, many of which trees

grew in the *pa* itself and furnished a grateful shade.....never, in the extensive course of my travels, did I ever behold so charming a site, or so complete and beautiful an example of an old fashioned *pa.*" *Maori History of the Taranaki Coast,* by S. Percy Smith.

In a letter received from Mr. S. Percy Smith in May, 1921, he makes a few further remarks on Ohangai *pa,* as he saw it in 1858:—"I fear that there is not much of the old *pa* left, as I knew it in 1858, when I spent a Sunday there with my companions on our return from Taupo. At that time it was a fully palisaded *pa,* with excellent carvings, full of people under Te Hanataua (I think that was his name), who insisted on the *pa* being kept neat and clean. It was certainly the most beautiful *pa* I ever saw, with delightful views over the distant country. *Karaka* trees grew in the *pa* and cast a fine shade. The next time I saw Ohangai was in 1867, when I went there with Colonel McDonnell in order to receive the submission of some of the Hauhau, who handed over a lot of useless old firearms. The palisading and houses were all gone, indeed I think our troops had burned the place."

In some cases the Maori occupied such sites for defence in modern times as he did in pre-gun days, even though commanded at fairly short range by other hills, but, as British troops seemed to have a strong objection to acting from such commanding hills, the Maori was pretty safe.

The Wai-pakura *pa,* on a hill top on the left bank of the Whanga-nui river, below Upokongaro, was commanded at fairly close range by other hill tops round it, yet the British troops who attacked it did not succeed in dislodging its garrison, though they are stated to have expended 10,000 rounds of ammunition in the attempt.

In the attack on the Maori position at Wai-kotero, Horokiri Valley, in 1846, no attempt was made to occupy the higher ground a few chains north or N.W. of the enemy's rifle pits, the attacking force being sent up a steep and narrow spur top to face the concentrated fire from the enemy's earthworks. Not only so, but, as they advanced, the pioneers cleared the bush, the only cover, from the narrow ridge as the soldiers advanced. Comment is needless.

We have seen that, in late times, when big guns were used against them, the Maori used much lighter stockades, and relied more on earthworks, rifle pits, trenches, underground chambers and passages, dry and bomb proof, that is after they had learned the uses, effect and limitations of big gun-fire. Thus such fire had really but little effect beyond destroying a trumpery palisading, the real defences were elsewhere, as our troops found at the Gate Pa, where the gentle savage crumpled up the British force and sent the survivors thereof flying in confusion.

We know that small detached earthworks, a ditch and bank, as also pit shelters, were used by the Maori in inter-tribal fighting, after he acquired guns, likewise in his fighting against us. These breastworks, or *parepare,* were used in attacking *pa,* and in other situations. A good example exists, or did exist thirty years ago, in the garden of the old Lorne homestead on the Wai-kohu river. It commanded a bend in the river, and was occupied by musketeers at a time when the *pa* on the opposite bank was being besieged, thus preventing any canoes passing up or down stream.

The natives soon acquired some of the European arts of fortification, as we have seen, and casemates and traverses were two of the most important of these. A traverse was referred to as a *kokoti* or *kotikoti,* also as a *niho.* Some of the earthworks formed by natives, even as early as the 'forties' of last century, were distinctly European in form and arrangement, such as those of Okaihau.

Major-General Alexander, in his work on *Bush Fighting* describes how the Maori, finding that their detached rifle pits were jumped over by the attacking troops 'covered them with a line of palisading, a space being left between the bottom of the palisades and the ground (except at intervals) to admit of the men firing on the ground level, after the usual way of defending *pa.*' He also speaks of the hostiles defending a position against troops 'with long rows of palisading, flanked at intervals, besides a square *pa* or redoubt which commanded the approach.' There would be rifle pits behind these palisades, and these were really the main defence, not the redoubt itself.

The following remarks are from Wilkes' account of the Bay of Islands in 1840:—"The natives, for the most part, have their permanent residence in towns, or what are here termed "pas," which are generally built on high promontories, or insulated hills, and fortified in a rude fashion with a palisade of upright stakes, about ten feet high: the houses or huts are all built closely together. Pomare's *pa*, being near our anchorage, was frequently visited. It contained about three hundred huts. There was a main entrance through the palisade, near which are two posts, the tops of which are carved into distorted representations of the human figure.

"Within the main enclosure are other enclosures, each containing five or six houses, with alleys of two feet wide, that traverse the town.....the 'pas' of the natives are not in reality strong places, but are little more than insulated and commanding situations.....The natives, in time of peace, do not live constantly in these *pa*, but are mostly occupied at their plantation grounds."

This account shows the natives of those parts as apparently still occupying old time hill sites, as is also shown in the following description of a Taranaki coast *pa* examined in 1834, which, however, was a cliff fort and not situated on a hill peak.

Describing the Orangi-tuapeka *pa*, on the Taranaki coast, as seen by him in 1834, Dr. Marshall says:—"This *pa* was the strongest of the three that had fallen into our hands, being built at the extremity of a peninsular commanding the Wai-mate and all the neighbouring country; but, on account of its great inclination towards the point at which it terminates, commanded in its turn by both. Like its fellows, it occupies a high, rocky, and triangular shaped position, having a perpendicular face to the sea, and two very precipitous land faces. It appeared to be of more recent date than the others, and was certainly far more beautiful. If its fortification were not so elaborately constructed as those at Te Namu, the advantages it derived from natural causes were much greater. The space occupied by it was detached from the high land adjoining by the manual labour of the natives, who had hewed off the solid rock at a part where it was narrowest, to the depth of several feet, and scarped it away on the land side to a still greater depth, and smoothed and edged the ridge at top so as to form a saddle between the country and the town, which none but a madman would attempt to cross. The slope from the top of the *pa* to where it faces Wai-mate, is considerable, but this only served to call forth the ingenuity of the natives, whose several enclosures, divided from one another by various kinds of fences, occupy as many terraces, the effect of which from without was singularly pleasing."

The Orangituapeka and Waimate fortified villages were situated on the north and south sides of the Kapuni stream, at its mouth.

In Captain Collinson's account of military operations at Porirua and Horokiri, he speaks as follows of Te Rangi-haeata's *pa* at Paua-taha-nui:—"It was in a well chosen position, being on a small hill close to the water's edge, and nearly surrounded by a creek [two creeks], but with the thick forest within one hundred yards of it. The *pa* was about 80 yds. by 85 yds., broken into flanks, and having a double row of palisades about two feet apart, the inner one being formed of trees one foot in diameter, with a ditch inside of all about four feet wide and deep, and crossed by numerous traverses; in fact, similar to those in the north, only not quite so strong." See Fig. **106**, p. 279.

The name of the above *pa* was Matai-taua. In his report on the evacuation of this place in 1846, Sir George Grey said:—"Upon examining this position I felt much gratified that I had not uselessly thrown away the lives of those brave men.....by directing an attack on this *pa*." The *pa* was situated 20 miles from Wellington, on a small spur overlooking the village of Paua-taha-nui (misspelt Pahautanui by us), and its site is now occupied by a church.

The two accounts given of the dimensions of this fort do not agree. The illustration given is taken from a rude wood cut that appeared in the Wellington Independent, August, 1846. Apparently two flanking angles were not included in the original sketch, and the sketcher certainly failed to depict the stockade correctly. The writer is indebted to Mr. Haylock for an

excellent plan based on the above mentioned woodcut and its explanatory notes. See Fig. **106**, p. 279. The corner near H overhung a steep descent to the creek up which McKillop took his boat when reconnoitring the position. The other side sloped down to a small rivulet and swampy flat.

ACCOUNT OF MATAI-TAUA PA AT PAUA-TAHA-NUI.

(From a Report by Major Last, 99th Regt., dated August 4th, 1846.)

"On examining the *pa,* I found it built on a very strong position, having a double row of timber palisades, with trenches and traverses across, about 80 paces long, and 35 broad, in the shape of a parallelogram, with flanking defences.

"There was also a bank of earth thrown up on the scarp side of the trenches, which, owing to the heavy rain, were full of water. The position altogether is a very strong one, and would have been almost impregnable without artillery, but a hill about 500 yards distant opposite the front face commanded it completely. Therefore, had the enemy remained, we might soon have dislodged them with our guns, which were in readiness at Porirua, in command of Captain Henderson, R.A.

"The *pa* stands on a very high ground fronting the harbour; at the foot of it runs a deep narrow creek, fordable at low water; the ground about it is excessively swampy, which the troops had to pass over. On the side the *pa* stands rises a very steep bank, which, even without opposition, the men had difficulty in climbing. And on the proper left of the position is a very deep ravine, the side of which is thickly wooded. The right face is also thickly wooded, and the ground gradually slopes away into a valley. The rear was the weakest part as to its defence, the ground covered with thick scrub, but from its locality I do not consider a position could have been taken up by us on that side. The defences on the front face were of a stronger description than any other."

MATAI-TAUA PA AT PAUA-TAHA-NUI.

References:—

A.—Two rows of palisades; the outer one rather weak, the inner one composed of timber ten inches square.

B.—Ditch six feet wide and five feet deep.

C.—Whares (huts). Communication had been cut underground from four of the huts into the ditch, and was intended throughout.

D.—Te Rangi-haeata's *whare* (hut), and a large hole dug in the ground intended for a hut for the same chief.

E.—Open yard. [*marae*].

F.—Native chapel.

G.—Entrances to the *pa.*

H.—Position occupied by the militia, etc., on taking possession.

I.—Head of the north arm of Porirua Bay.

Of the Puke-kakariki *pa* at Taranaki, Colonel Mould wrote in 1860:—"It was surrounded by two rows of palisades, the outer row being covered with bundles of green flax, and having inside the usual rifle pits communicating underground with each other." This *pa* was evacuated by the enemy, and destroyed by the troops on October 12th, 1860.

In his account of the fighting in the Taranaki district Colonel Carey makes the following remarks concerning Puke-kakariki and several other native fortified positions occupied about the same time:—

"The *pa* were all built of strong timber, braced together with supplejack, through which the 8-inch gun, after a whole day's firing, scarcely succeeded in making a practicable breach. The palisades bound in this manner, though cut in two by the shot, remained swinging, suspended by the supplejack, and were even then scarcely less formidable as a means of defence than when firmly fixed in the ground. The rifle pits were most ingeniously constructed, and flanked one another perfectly; while the precipitous banks in rear and on the flanks afforded footing to none

MATAI-TAUA PA

at Paua-taha-nui

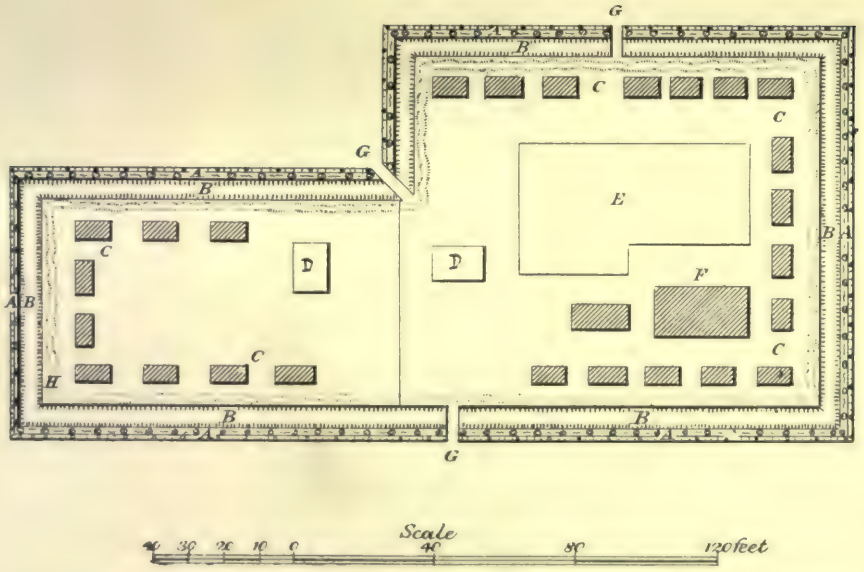
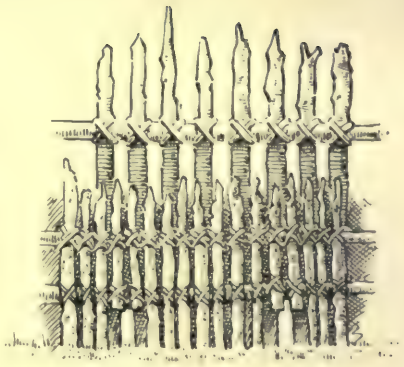


FIG. 106.—THE MATAI-TAUA PA AT PAUA-TAHANUI.
See p. 277.



STOCKADE FROM OUTSIDE PA.

[*From the Wellington Independent, August, 1846.*

FIG. 107.—THE TAUPO PA AT PLIMMERTON, PORIRUA DISTRICT.

Built by Ngati-Toa after the Wairau Massacre of 1843. Te Rangi-haeata and his followers abandoned this place later and constructed the Mataitaua Pa at Paua-tahanui, which they abandoned in 1846.

[*After Angas.*

but natives, had also been cut into small rifle pits. The whole of the *pa* were covered with fresh green leaves of the New Zealand flax in two or three layers, which, though they might not stop a bullet from the Enfield rifle at a short range, would certainly divert its course."

Colonel Mould also gives a plan and cross section of the Orongo-mahanga *pa,* in the same district. This place was of interest, because it was the site of an old pre-European *pa,* the dyke, or earthen wall of which was still standing. In re-occupying this old *pa,* the natives apparently had no intention of utilising the wall as a defence, or of firing over it, they reformed the old fosse outside the dyke into a 6 ft. deep ditch, with traverses, for the firing party, having a ledge or banquette on its outer side. Outside the ditch was the usual double stockade 9 ft. high, blinded with bundles of green flax. Trees were growing on the earthworks of this old *pa.* Covered pits in these forts were lined with fern (bracken) and used for cooking and sleeping in. This officer comments upon the small effect of projectiles on the stockades of *pa maori,* but made a serious error when he wrote:—"Capture of these *pa* may in all cases be calculated upon with little loss," for the Gate Pa and Rangiriri were in the days that lay before.

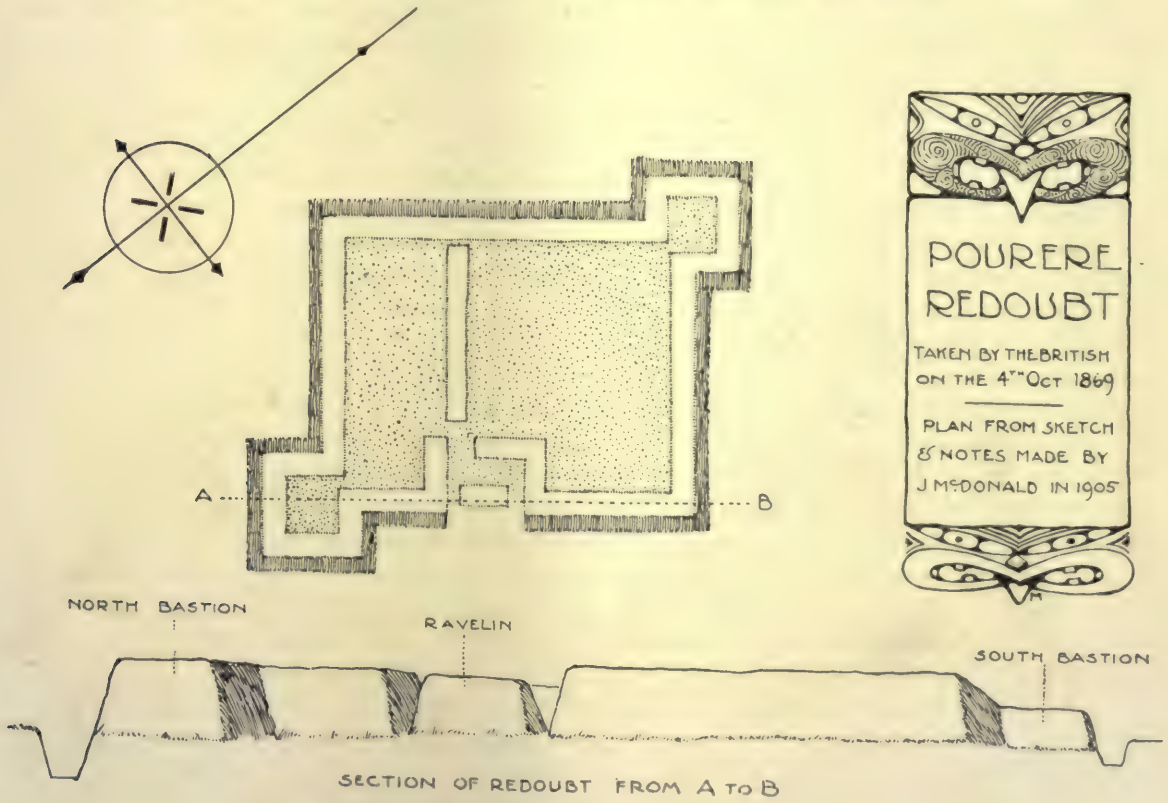


FIG. 108.—THE POURERE REDOUBT.
Constructed near Roto-a-Ira by hostile natives. Fell to Colonial troops in October, 1869.
[*J. McDonald, 1905.*

The accompanying plan of the Pourere *pa* serves to show how the Maori adopted the bastion or flanking angle after the introduction of firearms. The earthwork ravelin to protect an entrance passage was, however, occasionally employed in pre-European days, though stockades were much more commonly used for the purpose. This native redoubt was erected by hostile natives near Roto-a-Ira, and was taken by Native Contingent forces. The account of this fight given in *Reminiscences of the War in New Zealand* refers to the lack of flanking angles, so that apparently the place must have been re-occupied after the fight, and the two bastions added to the defences.

In describing the raids made by one Hongi, a bloodthirsty savage of early 19th century fame, after his acquisition of guns, Williams says:—"Hongi had five muskets which he always used himself, and four men to carry and load them for him. His practice on attacking a *pa* was to send one of his braves up to the *pa* to chop away the flax which was invariably tied up against the fence, and clear away a space for Hongi to fire at; if any one from the *pa* showed at the space, he was immediately potted off; after two or three had fallen in this way, the rest would be panic stricken, and a breach easily made in the *pa.*"

When the northern raiders attacked a *pa* in the Wai-rarapa district in 1820, they found that the stockade thereof was covered or wattled with flax, so that, if such a covering was not a pre-gun usage, these folk must have heard of it as practised elsewhere, or evolved the idea themselves, for at that time they did not possess guns, though the raiders had them.

The Okaihau *pa* at the Bay of Islands had two rows of palisades and a ditch inside; the external fence being covered with flax. This *pa* was attacked in 1845 by 400 British troops who were compelled to retire without effecting their object.

The coating or covering of the outer stockade with compact bundles of green *Phormium* leaves, as a protection against bullets, certainly seems to have been employed as early as 1820. The process was called *kopekope.*

The following remarks on the Onawe *pa* at Akaroa, taken from *Stories of Banks Peninsula,* are of interest:—"The remains of the defensive works which still exist attest the size and strength of the *pa,* and awaken a suspicion in the observer's mind that the Maoris received the assistance of Europeans in their construction. But this they most positively deny. They assert that the fortifications were entirely designed and executed by themselves, and that any departures from the ancient lines of construction that may be observable, were caused by the alterations necessary to meet the introduction of firearms. A deep trench surrounded the *pa,* the earth taken from it forming the walls, along the top of which a strong fence was erected. All round the inside of the fence was a covered way for the protection of the defenders."

Colonel Slater gives some account of the above place in the *N.Z. Military Journal* for 1912. It is situated on a pear shaped promontory in Akaroa Harbour:—"A deep trench surrounded the work, the earth taken from it forming the walls, along the top of which the palisades were erected. All round the inside of the palisades was a covered way for the protection of the defenders. The approach to a spring on the south-west side was by a covered trench, protected by walls running parallel to each other. As a further precaution to ensue a supply of water in the event of the spring being cut off, a number of large canoes were dragged up into the *pa,* filled with water, and covered over with matting to prevent loss by evaporation.....There was an inner earthwork, which divided the *pa* into two unequal portions."

This writer also gives a plan of the Kaiapohia *pa* showing five entrances thereto, though some were probably small ones, as those by which access was gained to the water supply. Of this famous fort, Colonel Slater writes:—"Kaiapohia was erected upon a promontory (at Pegasus Bay) about nine or ten acres in extent, which extends into a deep swamp lying between the sand dunes and the bank of the river. This swamp, which is very deep, nearly surrounds the site of the *pa,* and prevented it being attacked at any point except in front; and along the line of the front, extending from one branch of the swamp to the other, a distance of about 250 yards, it was defended by a double line of heavy palisading and a deep ditch, with two large outworks, from which a flank fire could be maintained on any party attempting to scale the palisades. The plan.....shows the natural strength of the *pa,* which was also surrounded by ramparts with a double row of palisades 18 ft. to 20 ft. high, bound at the top and bottom to cross-ties with a tough kind of woodbine called *aka.* The cross-ties were fastened to large *totara* posts erected at intervals along the ramparts.....On the western side were two covered ways to enable the garrison to obtain water during a siege. A portion of the promontory on the north-eastern side of the *pa* was reserved as a mortuary, one for each of the two *hapu* (clans) in the *pa*.....The ramparts were pierced by three openings, two on the land

side and one on the west side adjoining the lagoon, which was connected with the opposite side by a bridge."

The writer describes a six months' siege of this famous *pa* by Te Rau-paraha and his musket armed force, who sapped up close to the defences and piled up near them an enormous quantity of dry *manuka* brush, which at length filled the trench and rested against the stockade. The garrison endeavoured to dispose of the brush by burning it while a wind was blowing off the *pa,* but the wind changed and the stockade was destroyed. So fell Kaiapohia, with slaughter grim and great.

Meade's account of the *pa* at Te Teko, taken by the Native Contingent under Major Mair, in 1865, is of interest:—"The place was very strong, having in its rear the Rangitaiki river, swift, broad and deep, and on the other three sides three hundred yards smooth glacis, three lines of palisading, with flanking angles, and three rows of rifle pits and breastworks. The *pa* itself was 90 yards long, by 45 yards broad, and every hut within it was separately fortified. There was, moreover, a covered way communicating with the landing place on the river. Sapping was the only way to take such a place. Mair, who was present at Orakau, when that place was sapped under the direction of Captain Hurst, R.E., seems to have made good use of his eyes. He started three saps under cover of a slight undulation of the ground, and, in spite of a heavy fire, made such good progress that, on the 19th, the enemy craved a truce to arrange terms. Firing was suspended for 24 hours, but the saps were kept driving and the only terms Mair would accept were unconditional surrender. By 2 a.m. on the 20th the Arawa [sap] had cut off the covered way and got close up to the southern angle. Mair, then, for the last time, summoned Te Hura to surrender, assuring him that, if forced to carry the place by assault, no quarter would be given. They saw that the case was hopeless, and, at sunrise, the whole garrison marched out and lay down their arms. As they came out, each clan of the Arawa [the attacking force] sprang from the trenches with a yell, and immediately had as fine a war dance as ever was seen; old Poihipi and three or four other old sinners giving the time. It must, indeed, have been a stirring sight; the long column of prisoners standing with drooping heads while the captors danced the wild war dance with all the fury of excitement and success, the war cry of the Arawa echoing from hill to hill."

After the introduction of firearms, the fort builders of Maoriland were compelled to abandon many formerly strong positions, on account of them being commanded by adjacent hills, for the old time missile weapons of the Maori were of the poorest type. The natives also soon evolved the plan of erecting elevated platforms and towers in order to gain a point of vantage from which to fire into a *pa.*

In his story of the taking of the Mauinaina *pa* in 1821, as taken from Mr. White's papers and other sources, Mr. Percy Smith says:—"Hongi had to beat a retreat at first, but, returning to the charge whilst his people kept up a fire on the *pa,* they succeeded in pulling down some of the palisades, but not without losing many men. This done, they climbed up the sides of the mount which was crowned by the *pa,* losing numbers of their men, but finally reached the summit. Here they found the besieged protected by a thick wall of earth, against which the musket balls fell harmless. Hongi then ordered timber to be fetched, and with it erected a platform which overlooked the stronghold, and here he placed his best marksmen. Each discharge killed some of the defenders, and soon those who guarded the entrance were all dead. The *pa* was now rushed, and a fearful slaughter took place, men, women and children all shared the same fate, and with them three European sailors who were living with the people in the *pa.*"

Dieffenbach writes:—"Their mode of besieging is rude, but not without cunning. The besieging party digs trenches and erects high structures of blocks of wood, from which their fire can reach into the *pa.* Both parties have fosses with loopholes and outposts.....In an engagement on the sea shore, in which muskets were used, I saw both parties advance, guarding themselves by trenches rapidly dug as they pushed forward."

When Te Namu *pa* at Opunake was attacked by native raiders from the north the assailants constructed mounds of earth from which to fire into the *pa*.

In some cases the gun fighters were, however, defeated by an enemy possessed of native weapons only. The Kai-whakauka *pa* is situated on the top of a perpendicular cliff on the bank of the Whanga-nui river, east side, half a mile down stream from the Rere-taruke junction, wrote Mr. S. P. Smith; it also has cliffs on its northern side. Tuwhare and his gun-fighters assaulted this place, and succeeded in gaining an entrance thereto, but the confined area gave the garrison a chance to use their native weapons, which they did with good effect, killing many of the raiders, and throwing others over the cliffs to be dashed to pieces on the rocks below.

In Fig. **109**, p. 285, is shown the *pa* of Te Wherowhero, of Waikato, a modern stockaded village sketched by Angas in the 'forties' of last century. The lower hill on the right bears the appearance of having been a stronghold in former times.

The following is a description of the Hikurangi *pa* on the Whanga-nui river, as given in the *New Zealand Journal* of 1844:—"Hikurangi is a settlement containing about 350 souls. It is by far the best fortified *pa* I have yet seen. The outer fencing is composed of posts, slight, but very close to each other, and about ten feet high. At a distance of about five feet comes the next stockade; this is very strong and of the same height as the outer one. Between this second barrier and a third, similarly constructed as to strength and dimensions, is a deep ditch, in some places natural and in others artificial. This ditch contains a large number of young *karaka* trees, thickly planted. The leaves are of dark green, thus affording an excellent place of concealment for the besieged, from which they can fire upon an enemy in comparative security. The dark background afforded by these shrubs almost effectually conceals from observation those who may be firing from between the first and second fences. In Maori warfare I should consider this position impregnable."

Hochstetter gives a plan of the Tuki-ata *pa* at Tauranga where fighting was going on during his visit in 1859. It was, of course, one of the modern *pa*, as constructed since the acquisition of firearms. Within a double row of palisades was a trench, inside of which were earthen ramparts, and the enclosed space contained casemates. A cannon was planted near one angle and a passage is marked as leading out of the *pa* at another angle.

The Keke-paraoa *pa*, at Waikohu, does not bear the aspect of an old *pa*. Its light earthworks make but a poor show compared with those of the old *pa* on the opposite bank of the river, but a little lower down. In 1832 a number of Te Whakatohea tribe were living at Kekeparaoa with Nga Potiki, the local natives. Hence the place was attacked by Turanga tribes in order that the Whakatohea might be slain or expelled. The chief of the *pa*, Te Awariki by name, was slain, and the place taken after a siege of about a month. Two early white settlers, Ben Harris and Barnet Burns seem to have been present among the attacking force, which also included Te Wera, of Ngapuhi, who was then lving at Te Mahia. Other fortified villages of the Nga Potiki folk in that district were Te U, Okarika, Puke-kumara, Te Koutu and Kokoariki. The Whenua-nui *pa* is on the Rangatira Block. Tradition tells us that a greenstone *patu* and a *tiki* of the same material were buried at the base of a cabbage tree at Keke-paraoa in past years. This *pa* is quite an historic place, though apparently modern. The light earthwork defence is 90 yds. in length and 30 yds. in width. These earthworks were in a good state of preservation when I was living nearby in 1874.

It has been noted that, after the introduction of firearms, the earthworks of Maori fortified places decreased much in size. The huge walls of earth and deep fosses were no longer constructed, and were replaced by earthen parapets and ditches of very much smaller dimensions, while rifle pits, traverses and casemates also came into use.

In consequence of this change in the construction of fortified places, it is a curious and noteworthy fact that the old preEuropean *pa* are in most cases, in a much better state of preservation than those built after firearms were acquired. In many cases *pa* constructed as late as the 'sixties' have utterly disappeared, some having been destroyed by our troops, others have

FIG. 109.—THE PA OF TE WHEROWHERO, WAIKATO DISTRICT. [*After Angas. Redrawn by J. McDonald.*
See p. 284.

been razed by farmers when improving and ploughing the land, but yet others have simply fallen into ruins.

When examining some old *pa maori* at Wai-totara in June, 1913, I had pointed out to me by natives the site of Pa-toka, erected by the Nga-rauru folk after guns had been acquired. This was the place where many of the Taupo natives were slain. The local natives say that a Taupo force attacked and defeated their people at Pirau-nui, up the Wai-totara river, then came down to Pa-toka, where they were defeated with heavy loss. Other accounts say that these local folk acted with great treachery when they killed the Taupo men. This modern *pa,* probably built in the 'thirties' of last century, was situated on a hill about a quarter of a mile north of the Wai-totara railway station, and just above the road and lagoon. The defences of this place were of palisades and light earthworks, of which no sign now remains. The earthworks have been levelled, and the land ploughed, probably many times. The only token of former occupation that now exists here consists of numerous waterworn stones scattered about, such as were formerly used for various domestic purposes. Nought else remains. Exit Pa-toka.

Another modern fortified place of the 'sixties' in this district is situated near the township of Waitotara. This is Weraroa, situated on a hill about a mile north of Te Potiki-a-Rehua. This *pa* was never attacked by our troops, and General Cameron stated that he would not attack it with less than 2,000 men for the various services. It was abandoned by the hostiles, and was visited just prior to that evacuation by Sir G. Grey.

The Weraroa *pa* was abandoned by the Hauhau hostiles after the capture of many of their fighting men at the Arei-ahi village. These were the prisoners who escaped from the hulk in Wellington Harbour in 1865. The *pa* was then occupied by our troops. Colonel McDonnell has recorded the fact that, after the fight at Moturoa, the Native Contingent built a redoubt at Weraroa 'on the site of the old Weraroa *pa,*' and were attacked by the hostiles while engaged in the work.* Shortly after this, the Contingent was ordered from Weraroa to Patea, and the redoubt at Weraroa was garrisoned by a European force from Whanganui under Powell, Broughton and Mitchell. This force was here attacked by the Hauhau, who strove for some hours to take the place, but were beaten off. "Soon after this, the redoubt was abandoned, and many stores were destroyed in a hurry, and the canteen keeper was well nigh ruined."

It will thus be seen that the earthworks now seen on the hilltop at Weraroa are not those of the Maori fort, as erected by the hostiles, but the redoubt as built or altered by our troops. The only defensive works made by the enemy now existing are some rifle pits on the edge of the plateau some distance away, to be described presently.

This redoubt consists of an earthwork wall with a ditch round the outside of it, as also flanking angles, of which there seem to have been three. Save for these projecting angles the form of the redoubt is rectangular. Possibly there was a stockade also, but no sign of timber remains, hence this is not assured. The inside area defended by the wall is about 20 yds. by 19 yds., and the exterior measurement, *i.e.,* outside the ditch about 40 x 36 paces. The walls are yet in a fair state of preservation, but are being destroyed by stock; the entrance to the redoubt is at the end facing the south east. At the north-west end some of the earth dug from the ditch has been thrown on the outer side thereof, on the top of a number of trunks of tree ferns laid close together, though what purpose these served we cannot say. Out of the face of this earth wall projects the stem of a clay pipe, a fairly good proof that this work is not pre-historic. The ditch was probably about 5 ft. deep originally. The site is a commanding one, and affords a fine view of the surrounding country, its plateau, ravines and valleys.

On the edge of the plateau some 200 yards or more westward of the redoubt are some rifle pits that command the steep spurs by which the place might have been approached from the

*Wiremu Kauika tells me that the Maori *pa* was not destroyed, but was altered by the troops in some way.

river side; these are Maori works. They are of different sizes, to contain one, two or three men. One is about 9 ft. long and 30 in. wide, the excavated earth having been piled on the outer side. Further along, about due south of the redoubt, there appear to be some hut sites, near a spring, and a rectangular raised site or mound 18 ft. by 16 ft. with a ditch round it.

Passing on to the head of the spur between Weraroa and the Potiki a Rehua *pa*, we find some works of interest, inasmuch as, on the one ridge, we find both modern and pre-European earthworks. On the upper part of this spur we find a series of rifle pits, apparently designed to oppose any force advancing up the spur towards the *pa* on the upper ridge to the north. Below these, on the north west slope of the spur are two rows of storage pits of the semi-subterranean type, with little ditches to run storm water away from them. Local natives inform us that all these works pertained to the Weraroa *pa*.

From here the spur falls away steeply toward the river for possibly one hundred yards, becomes much narrower, and continues with a gentle slope for some 80 yds., when again it becomes steeper. This area of 80 yds. or so has been utilised as a *pa* in pre-European times. Across the ridge, at the upper end of this area, a huge ditch has been cut as a means of defence against an enemy advancing down the spur. This fosse is about 25 yds. long, original depth about 12 ft. and the earth has been piled up as a wall on the down hill side, thus proving that this defence was against attack from the upper part of the spur. This is undoubtedly one of the heavy pre-gun earthworks, indeed a gun armed force could occupy the high part of the ridge so short a distance away and render this place untenable in a very short space of time. The ditch and bank combined would present a wall of probably not less than 18 ft. and a stockade of 10 ft. on the top of this would much increase the difficulty of negotiating it, more especially when stalwart defenders, on the right side of the fence, were prodding viciously at the assailants with unpleasantly sharp spears, and heaving rocks down on him from lofty fighting stages.

At the lower end of this area of 80 yds. a scarp has been carried across the spur to act as a wall of defence against enemies advancing up the ridge, the same being surmounted, as usual, by a stockade. The sides of the spur are steep and stockades would also be erected along these flanks, at the break of the slope. The flattened top of the spur is about 60 ft. wide.

This account of a pre-European *pa* is somewhat out of place here, but it has been inserted on account of its proximity to the modern rifle pits (of the 19th century) immediately above it, showing how the two may be confused unless one makes a careful examination. Indeed some of the European residents hereabouts are under the impression that this work is of the same date as the rifle pits (the 'sixties' of last century), and that the European redoubt on the hill above is the Maori *pa* of Hauhau days, as erected by them.

Below this little fortified place of 80 x 20 yards, the spur becomes a 'razorback,' on which are seen the remains of several old store pits.

The site of another redoubt constructed by our forces in the 'sixties' lies between the railway and the coast, on the left bank of the Wai-totara river.

In discoursing upon the Bay of Islands, Jameson says:—"Opposite the centre of the beach stands the native *pa*, or village, a square inclosure of fifteen or twenty acres, surrounded with a high palisade of rude construction, but sufficiently strong to resist the attacks of an enemy destitute of artillery. Many of the posts are surmounted by representations of the human face and form, carved out of the wood, and afterwards painted with ochre and pipeclay.....In these rude yet still elaborate specimens of sculpture, which have been for the most part executed with stone instruments, the New Zealanders evince a strong relish for the grotesque and ludicrous; and it would even appear that they deem perfection in the art of statuary to consist in distortion and caricature....."

Of the Oruanui *pa*, near Taupo, Meade wrote in 1865:—"The *pa* is strongly situated on the crest of a small hill, surrounded by a high stockade consisting of a double row of slab stake fencing, with flanking angles, and lined with a chain of open and covered rifle pits." After

FIG. 110.—THE TIHOI CLIFF FORT AT WHENUAKURA. [*After Swainson.*

See p. 289.

the introduction of firearms the Maori soon realised the advantage of flanking angles, an item that was not necessary in the pre-gun *pa*.

Another modern innovation in native forts was the forming of an earthwork by filling in the space between two stockades with earth, though the practice does not appear to have been a common one.

Of the Tihoi *pa* at Whenua-kura, Wakefield wrote:—"The cliff is nearly precipitous on all sides, except where a narrow neck joins it with the mainland. This neck, however, slopes upwards to the *pa*, and is defended by native fences and trenches of the strongest kind. A double row of stockades is filled in with earth to the height of a man, leaving small holes level with the ground. A trench inside the stockade is dug to the depth of a man's body; and spears and muskets are thrust by the defenders through the small holes. A second bank is raised inside the trench, from behind which a second row could ply their weapons against the stormers of the palisadoes; and high fighting stages, protected by fences stuffed with turf, also afford commanding stations for defenders to fire over the outer fence. The entrance, through which only one man can pass at once, is so twisted as to be exposed to the enfilading fire of the whole line of defenders. There were signs, outside the stockade, of two outer rows of defences in former times; and artificial banks reached from cliff to cliff across the neck. Thus three strong stockades, one commanding the other, must have made this side impregnable to Maori warfare; and an assault, except by stealth, on the other faces, would have been sheer madness." See Fig. **110**, p. 288.

During the fighting at Taranaki in 1860 the natives are said to have erected and completed in a single night a *pa* of considerable size, with a double stockade round it, the space between the two lines of palisades being filled with sand to make it bomb proof.

Of a *pa* seen in the Nelson district (at Coal Bay) an early writer in the *N.Z. Journal*, says: "On this level space we found a *pa* beautifully situated. It is called Taupo or Taipo. Seen from a distance it shows only a huddled collection of old grey stakes of irregular height, placed side by side. Nearer, you find that they form an enclosure, and have, at regular intervals, a higher post, the top of which is rudely carved into a head, or mere knob. These are crossed by poles bound together with flax; or a double fence is made, the inter-spaces being filled up with rushes or dry fern. The huts stand inside this enclosure, or some have a separate enclosure, adjoining or at a little distance from the main one.....Within the enclosure are platforms, each raised on four poles, heaped with provisions, the poles being stripped of bark and very smooth, to prevent the rats from climbing them. On other slanting poles, or on the huts' roof, you see a dusky red parrot (*kaka*) or two, climbing and clutching with their hooked beaks." *New Zealand Journal*, 1843, p. 166.

The remains of the Okaihau *pa*, as seen in 1914, consist merely of a few rifle pits on the eastern side of the road from Ohaeawai to Okaihau, and near the eastern shore of the Omapere lake. The main works seem to have occupied the gently sloping ground on the western side of the road, but are now entirely obliterated by farming operations. The five pits remaining probably composed an outwork, and there is no sign of any means of communication between the different pits except by clambering over the barriers or partitions between them. These pits are now from 3 ft. to 4 ft. in depth. The earth excavated has been thrown up on the outer sides to form rude parapets, now 12 in. to 30 in. in height.

These rifle pits are situated on a very gentle slope downwards from S. to N. the main *pa* having been on the south side. There are a few ill defined pits, etc., on the western side of the road, between it and the fence.

Ohaeawai Pa.

The Rev. G. Clarke gives the following description of the Ohaeawai *Pa*, Bay of Islands:—"The *pa* was very strongly built, with a double row of palisades, the posts of which were thick enough for our round shot to stick in them, and they were so ingeniously fastened by transverse rafters, that it was very difficult to bring them down, even when they were cut through. For

some eight feet from the ground there was a thick thatched screen of green flax.....The interior was a network of palisades and pits and covered ways. A fosse surrounded the whole work, and it was held by a garrison of about three hundred men.'' Of the Rua-pekapeka *pa,* the same writer says:—''The inside was a network of covered ways, and the houses were all bomb proof.'' Both of these were gun fighters *pa,* erected in the 'forties.'

In speaking of the two *pa* built by the hostiles at Pa-te-rangi and Pikopiko, Colonel McDonnell states that they were double palisaded and rifle-pitted. The pits were deep, and roofed over with logs 18 in. thick. These again were covered with bundles of tightly bound fern, and a thick layer of earth was shovelled over the whole and tramped smooth. Only small holes were left for the men to fire through. Each *pa* was flanked, and equally strong in all parts.

During the war against Heke and his forces in the Bay of Islands, the enemy contrived to preserve their thatched huts from being set on fire by rockets, by means of covering them with green flax. They also covered the outside of their defensive stockades with the same material, forcing it into the interstices of the outer palisades to turn or stop bullets. Colonel Mundy describes the enemy's *pa* at Ohaeawai as follows:—''It is.....in form a parallelogram, about 150 to 200 yards long, by 100 yards broad at each face. On two angles there are projecting outworks, but the others have none. There is an outer barricade of timber, about 10 ft. high and, as well as I could judge with a good glass, each upright piece from 6 in. to 8 in. in thickness, and fixed in the ground close to each other. On the outside of this barricade a quantity of the native flax is tied, so as to make it more ball proof. Within this barricade there is a ditch from 4 ft. to 5 ft. deep, and about the same broad. Within the ditch there is a second barricade, similar to the outer one; and the whole place is divided into three parts by two other barricades crossing it, of similar height and strength to the outer one.''

This *pa* at Ohaeawai held by gun fighters against British troops in 1845, was thus described by Dr. Thomson, 58th Regt.:—''The *pa* stood on a clear level space in the forest 500 yards square; on each side of the *pa* was a ravine with woody hills, and the surrounding country was thickly covered with trees. The *pa* was 90 yds. by 50 yds., with a square flank projecting on each side. It was surrounded with three rows of palisades, the two outer being close together, and 6 ft. from the inner fence; the inner palisade, the strongest of the three, was constructed of trunks of trees 15 ft. high, and from 9 in. to 20 in. in diameter. Between the inner and middle fences there was a ditch 5 ft. deep, with traverses, from which the defenders fired through loopholes on a level with the ground, and this ditch communicated with passages under the palisades. Inside the *pa* there were huts having underground excavations. The enemy within the fortification were estimated at 250 men, armed with double and single barrelled guns, with plenty of ammunition. Flax was hung over the outer fence to conceal the strength of the inner palisade.''

This *pa* was attacked by British troops, with cannon, and was assaulted on July 1st, when the troops were repulsed with severe loss.

Maning gives the following description of the Ohaeawai *pa*:—''The inside fence was made of a very hard wood which does not splinter much; the posts of this fence were about one fathom in the ground, and the fence over ground was about four fathoms high. The posts were stout, and some of them would require thirty men with ropes to raise them. Inside this fence was the trench in which the men stood to fire; their faces only reached the level of the ground outside the fort. The loopholes, through which the men fired, were also only level with the ground outside, so that in firing the men were very slightly exposed. Outside of all was the *pekerangi,* which is a lighter sort of fence put up to deaden the force of shot before it strikes the inner one, and also intended to delay a storming party, so that while they would be pulling it down, the men behind the inner fence might have time to shoot them. This *pekerangi* was nearly as high as the inner fence, and stood little more than half a fathom outside of it; it was made of a strong framework, and was padded thickly with green flax to deaden the force of shot. It was also elevated about a foot from the ground, so that the men behind the inner fence, standing in the ditch, could shoot through the loopholes in the inner fence under this outside fence; also

at different distances along the *kauae* (curtain) there were *koki* (flanking angles), capable of containing many men, so that a storming party would be exposed to a fire both in front and flank, and in these angles were put large ship guns. The men inside, in the inner trench, were also protected from a flanking fire by *pakiaka* (traverses), which crossed the trench at intervals; also inside the place were many excavations underground covered over with large logs of timber, and over the timber earth. In these pits the men could sleep safe from the shot of the big guns of the soldiers. There were also high platforms at the corners of the inner fence, from whence could be seen all that an enemy might be doing outside.

"When this fort was completely finished and provisioned the priests (*tohunga*) took, according to ancient custom, the chips of the posts, and with them performed the usual ceremonies, and when they had done so they declared that this would be a fortunate fortress, so it was made sacred (*tapu*), as were all the men who were to defend it.....The *pa* at Ohaeawai was attacked against the advice of the friendly native chiefs, who well knew its strength, and the certain repulse to be expected. They called Colonel Despard anything but a soldier, and the term 'foolish and inexperienced' is the mildest they applied to him."

"It occupied us three days to destroy the Ohaeawai *pa*. Large fires were made against the stockade in several places, and where the posts were too thick to burn while standing upright, they were pulled down by main force. In some cases it took the whole strength of forty men, with ropes, to pull down one post, although much of the earth at the base had been previously dug away for the purpose of loosening it." From the United Service Magazine, 1846.

The Rev. R. Taylor wrote as follows of Ohaeawai:—"When Ohaeawai was attacked and so many of our brave countrymen fell, long before the news reached the settlers in the south, I saw in the interior several neatly constructed models of the *pa* and its defences, made with fern stalks, to show the way they had gained the victory. These had been made by messengers sent from the north to publish their success to those in the south."

There remain but few signs of the old *pa* of Ohaeawai, but in the churchyard near by stands a stone monument with the following inscription:—

"Ko te tohu tapu tenei o nga hoia me nga heramana o te Kuini i hinga i te whawhai ki konei ki Ohaeawai i te tau o to tatou ariki 1845.

Ko tenei urupa na nga Maori i whakatakoto i muri iho o te maunga rongo."

(This is the sacred token of the soldiers and the sailors of the Queen who fell in the fight here at Ohaeawai in the year of our Lord, 1845. This burial ground was set aside by the Maoris after the conclusion of peace.)

Ohaeawai is now known as Ngawha, the former name having been officially transferred to the township at Taiamai, three miles to the eastward.

Colonel Mundy's version of the dimensions of Ohaeawai differs much from those of Thomson and Collinson.

Rua-pekapeka Pa, Bay of Islands District, 1846.

Colonel Despard wrote the following account of this *pa*, attacked by British troops in the 'forties' of last century:—"The *pa* itself was an oblong square, with projecting works on each face, and at two of the angles, so as to form a flanking fire in every direction. See Fig. **111**, p. 292. The first range of stockade was about 10 ft. high, composed of either whole trees of the *puriri* wood, the hardest and toughest wood known in New Zealand, or of split timbers of the same wood, sunk in the ground from 2 ft. to 3 ft. deep, and placed close to each other. Many of the former were from 12 in. to 15 in. in diameter, and loopholed close to the ground. Within this stockade on two faces, at 3 ft. distance, was another stockade, equally strong, also loopholed close to the ground, corresponding with those in front; and within that again there was a ditch 5 ft. deep, and the same breadth, with an embankment of earth on the inner side, behind which a man could lie and fire through the loopholes of both fences. On the other faces the ditch was between the two stockade fences. The ditch was divided, at every 5 ft. or 6 ft. by traverses, leaving a small opening passage, not opposite each other, but alternate on either side. The

ground in the interior was excavated in many places to afford shelter to the garrison from cannon shot. Some of these excavations were entered from the ditch, and others were thatched over to keep out the wet." See Fig. **111** below.

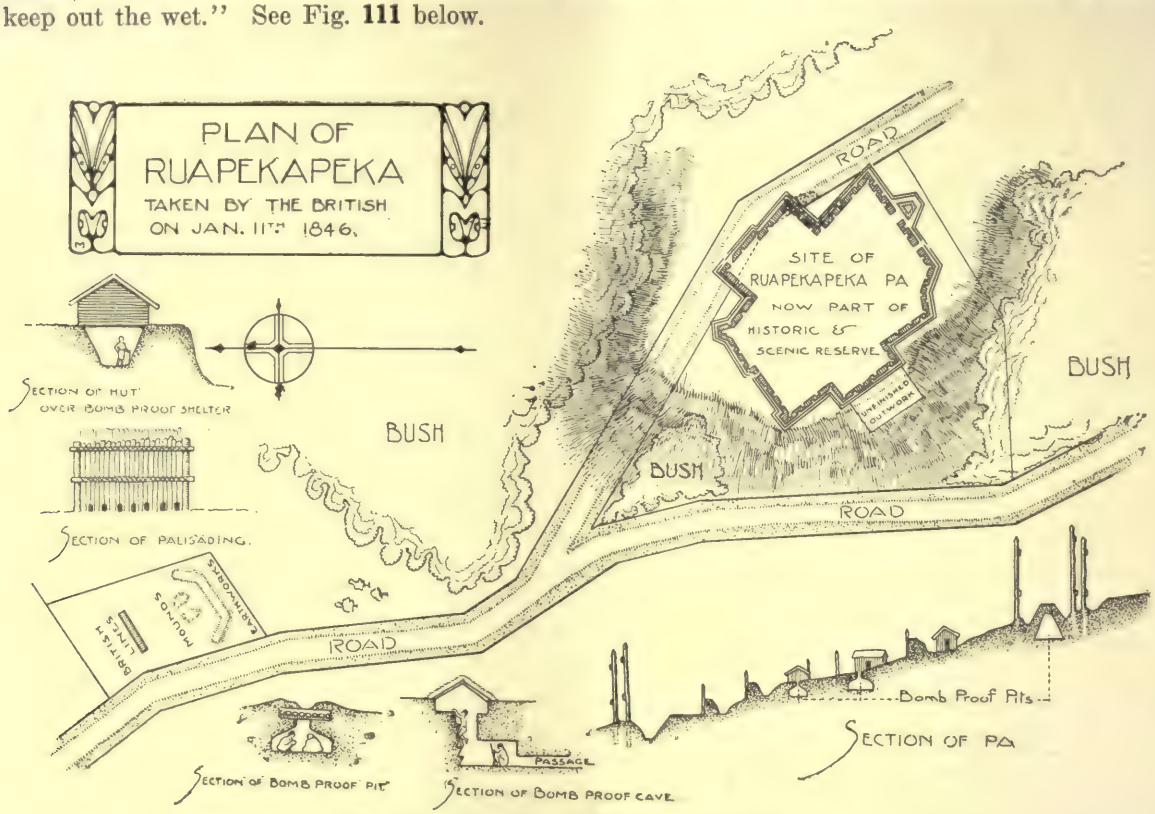


FIG. 111.—RUA-PEKAPEKA PA, NORTH AUCKLAND. [*J. McDonald.*

Illustrating modern usages, bastions, bomb proof pits, etc.

Dr. Thomson's description of the same *pa* is as follows—"Rua-pekapeka *pa* measured 170 yds. by 70 yds. and was much broken into flanks. It had two rows of palisades 3 ft. apart, composed of timbers 12 in. to 20 in. in diameter, and 15 ft. out of the ground; there was a ditch between the palisades, and the earth was thrown behind to form an inner parapet. In principle it resembled Ohaeawai but was much stronger. Within the *pa* the enemy numbered 500.... ....English engineers said a breach should have been made in the palisades of Rua-pekapeka by exploding gunpowder close to them, as was done in bursting the gate at Ghuznee, but Ghuznee gate was one piece of workmanship, the Rua-pekapeka were three independent works. From an inspection of Rua-pekapeka, the troops saw that an assault would have been attended with severe loss, and it was universally admitted that the natives were becoming masters in the science of fortification.....In an English fort the ditch is deep, and outside the defences; in a [modern] New Zealand *pa* the ditch is shallow, and inside the palisade. In an English fort the ditch is made to obstruct the enemy; in a [modern] New Zealand *pa* the ditch is made to cover the defenders, who stand in it and fire at the besiegers."

These latter remarks apply to the modern *pa* only, not to the old type of native *pa*, or fort.

The British troops opened on the above *pa* with three 32-pounders, one 18-pounder, two 12-pounders, and seven brass guns and rocket tubes. At the end of ten days the troops took this *pa* by assault—after the enemy had obligingly vacated it.

Report on the *Pa* of New Zealand [Extracts from] by Lieut. G. Bennett, R.E., dated February 10th, 1843:—

"The strength of the New Zealand *pa* consists principally in the choice of position. They are generally situated on peninsular points, with three sides inaccessible; being steeply scarped

FIG. 112.—MAKETU PA.
This is an interior view of the Maketu *pa* of the "sixties," when many modern usages had been introduced.
[*Drawing by J. McDonald from Woodcut.*

towards the sea, usually from 50 ft. to 60 ft. high, and palisaded at top.....I consider the attack on these sides, except by surprise, impracticable; the fourth side is always cut off by a deep ditch having steep scarps from 20 ft. to 30 ft. in height, and counterscarps from 6 ft. to 16 ft.; the nature of the soil being generally a stiff clay, or soft sandstone, retains the slope of sixty degrees. The terreplein, from 20 ft. to 30 ft. broad, has a strong palisade in front, or the palisade is placed above the scarp with a low parapet and banquette, and the whole of the interior of the *pa* is intersected in every direction by fences, each hut being fenced around. These interior defences, though low, if not destroyed before the entrance of the troops, must entangle and confuse them, and totally prevent the use of the bayonet. The ditches are also flanked by a strong palisade.

"In addition to the principal *pa*, there is also frequently an outer work with a low ditch palisaded in front, and commanded by the main work; and should one part of the *pa* be considered weaker than another, it is strengthened by a double palisade, 3 ft. apart, with embrasures left in the outer one at the level of the ground, and a trench cut inside to afford cover.

"In short, these *pa* assume every description of defence of this nature of which they are capable, and are sometimes strengthened by even three successive rows of palisades.

"The palisades themselves consist of large trees about 1 ft. in diameter, roughly hewn, and placed 6 ft. or 8 ft. apart, and afford safe cover for a man. They are from 12 ft. to 20 ft. in height, rudely ornamented at top. Between these posts are long stakes, from 8 ft. to 10 ft. high, and 1½ in. in diameter, and nearly tangent to each other, and strongly bound together; or, if greater strength is required, rough three sided stakes about 9 in. perimeter are used.

"Should the *pa* not be situated on a peninsula, its front consists of one steep side towards the sea, with generally a deep and wide gully on each flank, and the gorge is protected by a deep ditch, as before described.

"The section of the *pa* of Te Mutu exemplifies the usual defences, but the natives evince considerable military knowledge, and I observed that several of their *pa* had their counterscarps excavated, having small openings like embrasures. These, I am told, are used for keeping potatoes, and I cannot learn that they have ever been used for defence.

"In illustration of their military knowledge, I may say that when I was ordered to prepare a plan of attack of the *pa* of Maketu, I consulted the chief Tupaea: he immediately sat down on the sand and erected a model of the *pa* and surrounding country, giving me the distances and command that each hill had over the *pa* and each other, and pointed out how it might be approached with safety. The plan I made from his model I was subsequently able to compare on the spot, and found his plan and ideas very correct.....

"I have been informed that the *pa* in the interior of the country are constructed on the same system, detached hills, or hills on the extremity of a ridge, being the site usually chosen.

"What I have said relative to the choice of position of their *pa* relates only to that arm against which they have hitherto had to contend,—the musket. But I have seen no *pa* which was not commanded at distances varying from 200 to 600 yards; consequently the method of attack is simple and certain."

To this account, Captain Collinson added:—"The subsequent experience of the *pa* in the interior corresponds exactly with his description. Their strength consists in the site..... The *pa* afterwards attacked by the British troops were expressly constructed against them, and were much stronger in the palisading than those he describes."

Of a *pa* taken at Wai-tara, in 1860, a correspondent writes:—"The *pa* consisted of ten chambers excavated in the clay, communicating with each other, three at each side, and two at each flank, each calculated to contain from twenty to twenty-five men. These chambers were wider at top than at bottom, sloping from the centre to give strength and width of base to the work. The chambers were overlaid with rafters and a layer of fern and earth between two and three feet deep, the whole surrounded with a double fence, filled up with fern and earth, communicated

with the interior, and from whence the inmates could fire without in the least exposing themselves."

Of the famous Gate Pa incident Colonel Gudgeon writes:—"Four hundred men of the Ngai-Te-Rangi tribe, entrenched at the Gate Pa in covered rifle pits, surrounded by a mere cobweb of palisade, defeated General Cameron and his army with small loss to themselves, notwithstanding a preliminary bombardment of at least one hour's duration delivered by 100-pounder Armstrongs and field guns of approved patterns. This iron hail was supposed to rain death and destruction on the devoted garrison, and probably would have done all those things had the earthworks only been designed by aid of tape, plan and European precedent; but the wily Maori has an intelligent want of appreciation of European forms and text books, and a contempt almost sublime for the regular soldier as an enemy. He does not deny his manly qualities, or his courage, but he cannot understand his want of initiative or even intelligence; he cannot admire the manner in which the lives of these soldiers are frequently thrown away, and wonders why they should invariably attack the strongest face of a Maori entrenchment. On this occasion, whatever may have been the reason, the Maoris were neither hurt nor frightened, whereas the troops, who were led with much courage, and sacrificed by their general, not only lost many men, but suffered a stampede of unusual magnitude."

The illustration here given shows the form of trenches employed by the Maori against our troops at the Gate Pa and elsewhere. The light palisading mentioned above, and the orthodox traverses are essentially modern features. See Fig. **113**, p. 296.

Regarding the repulse of the British troops at the Gate Pa, Major-General Mould wrote:—"The courage and endurance of a small body of Maoris exposed to an almost crushing artillery fire for a period of eight hours, and then at its termination meeting and repelling a gallantly conducted assault, are almost unequalled, and show that whether acting amongst the swamps and bush of their country, or in a scarcely tenable earthwork in open country, they are a foe not to be despised. They possess the highest military qualities; coolness, wariness, spirit, determination, judgment in taking up positions, sagacity in perceiving the moment when to vacate them."

In writing of the Gate Pa, Featon says:—"The rifle pits in the *pa* were mostly covered over with brush and earth, and formed a network of concealed passages, the roof being raised a few inches above the parapet, so as to enable the natives to fire out on their assailants."

The artillery employed in battering the Gate Pa comprised:—

One 110-pounder Armstrong
Two 40-pounder Armstrongs
Two 6-pounder Armstrongs
Two 24-pounder howitzers
Two 8-inch mortars
Six Cohorn mortars.

These guns opened fire on the *pa* shortly after daybreak on April 29th, 1864, and continued, with short intermissions, until four p.m.

Notes on the Maori Earthworks at Rangiriri, 1863.

(By Major C. Heaphy, V.C.) See Figs. **114-115**, p. 297.

To stop the advance of General Cameron the natives chose a narrow strip of dry land lying between the Waikato river and a series of deep swamps and lagoons. The main road lay along this, going from left to right across the sketch. Across this road they built a bastion connected by a long curtain and ditch with the river and the swamp. The ditch, which was dry, was too wide to cross without planks, and the parapet too high (21 ft.) to climb without ladders. No such appliances were with the attacking party. About 220 natives held the bastion and traverses about it. They were attacked by a portion of the 65th Regiment who got on to the parapet of the

FIG. 113.—THE GATE PA, TAURANGA DISTRICT. ILLUSTRATING THE ADOPTION OF EUROPEAN USAGES.

See p. 295. [*From sketch by Major-Genl. G. Robley.*

curtain, but were unable to take the bastion. A detail of Royal Artillery men (36 men) with their carbines then assaulted it. They got close up to the bastion and their commanding officer was mortally wounded and lay close to the rear of the bastion, but they were obliged to retire.

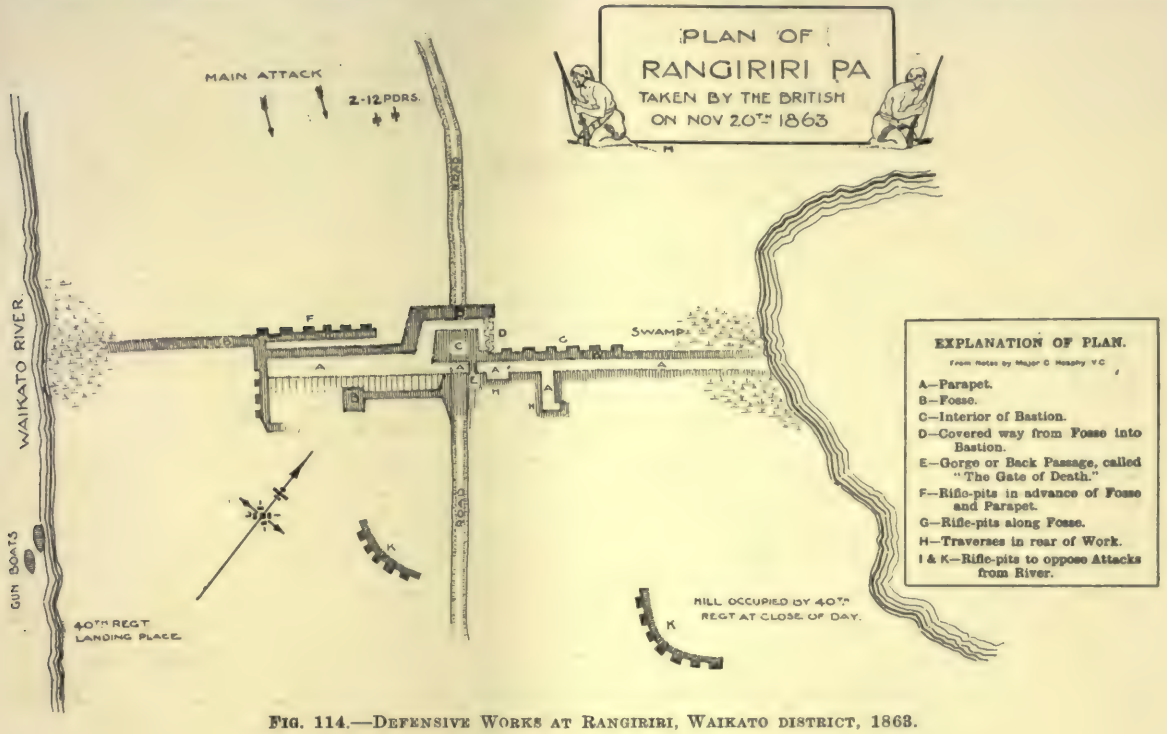


FIG. 114.—DEFENSIVE WORKS AT RANGIRIRI, WAIKATO DISTRICT, 1863.

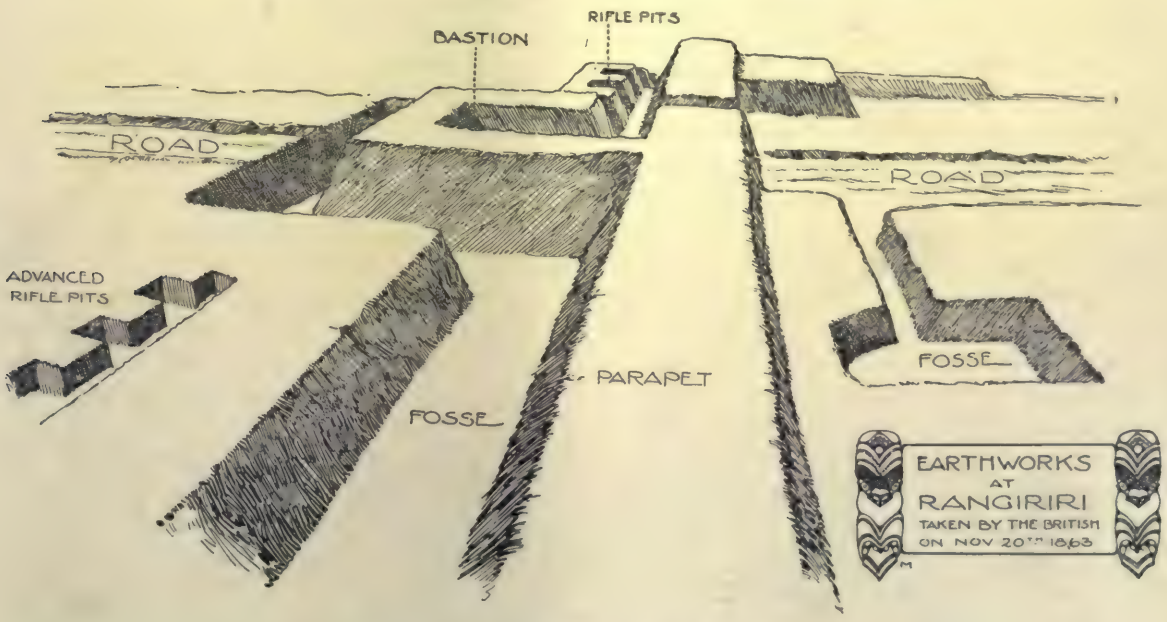


FIG. 115.—THE FAMOUS BASTION AT RANGIRIRI.
See p. 295.
[*J. McDonald.*

About 90 men of the Naval Brigade then advanced. They got into the ditch, but all attempts to capture the bastion failed. A midshipman, the most advanced, was killed in a covered way that led from the ditch into the interior of the bastion. Though foiled, the sailors did not alto-

gether retire; they scooped out holes and caves in the counterscarp and so sheltered themselves from the enfilading fire from the bastion, and thus remained in close proximity to it all night, occasionally throwing hand grenades amongst the natives.

During the night the assailants made a partial mine under the near face of the bastion, and at daylight on seeing a cask of powder being brought to blow them up, the natives hoisted a white flag and surrendered, 183 in number. Thirty-six natives had been killed.

Two nine-pounder Armstrong guns throwing shells at the bastion made no practical impression on it. A naval six-pounder and two gunboats also fired into it without effect.

The place is interesting as showing how natives can improvise earthworks that will successfully resist the sudden rush of disciplined troops unsupplied with ladders and planks, and without breaching artillery.

The Rangiriri *pa*, that withstood two assaults by British troops, is thus described by Major-General Alexander:—"The enemy's works consisted of a line of high parapet and double ditch, extending between the Wai-kato river and Lake Wai-kare; the centre of this line being strengthened by a square redoubt of very formidable construction, its ditch being 12 ft. wide, and the height from the bottom of the ditch to the top of the parapet 18 ft. The strength of this work was not known before the attack, as its profile could not be seen from the river or the ground in front. Behind the left centre of this main line, and at right angles to it, there was a strong interior line of rifle pits facing the river, and obstructing the advance of the troops from that direction. About 500 yards behind the front position was a high ridge, the summit of which was fortified by rifle pits." The above quoted work, *Bush Fighting*, contains some interesting plans of different *pa* and actions, though the frontispiece is misleading.

In describing the defeat of the English troops at the Gate Pa, this writer remarks:—"The repulse, without doubt, arose from the confusion occasioned by the intricate nature of the interior, honeycombed with rifle pits and under ground passages, and the enemy lying down had, no doubt, considerable advantage in shooting at our men from concealed positions."

At Manu-tahi, the troops found 'a strong work, with parapets 8 ft. and 10 ft. thick in rear of the palisading, and casemated covered-ways,' says the above authority. Again, at Te Arei *pa*, 'the works were found to be very formidable, ditches 15 ft. deep, and this novelty in Maori fortification, there was a strong parapet built of earth mixed with fern, similar to the system of the Engineers in New Zealand, but about 16 ft. thick, covered by a line of rifle pits or a covered way, about 40 yds. in front of the line of the stockade.' An illustration given of the outworks at Te Arei shows a long rifle pit a little distance outside the palisade, also another further out, the latter having a parapet outside it, and a banquette to accommodate the defenders. Cross cuts enabled them to pass from one defence to the other, and to enter the stockade.

Colonel McDonnell tells an amusing story of how, when Imperial troops were sapping up to a certain *pa*, the enemy busied himself in making fascines and selling them to the troops for their use, through the medium of so called friendly natives. "So the sap progressed steadily, and did nobody any harm; and when, after a time, it came too near, we left that *pa* and built another one."

Of the Otapawa *pa*, on the west coast of the north Island, Kimble Bent, the renegade, gives the following description:—"The only access to the interior of the stockade was through a low and narrow gateway. Just within, the entrance was blinded by a short fence, so that an enemy could not charge straight, even if the gate were open, but would have to turn first to the left for a short distance, and then to the right, exposed to a fire from between the palisades, before the open *marae* [plaza] was reached. The *pa* was defended by two rows of palisading, with a ditch between and another shallow trench inside the inner stockade. The outer stockade, the *pekerangi*, was about 8 ft. high, and was the lighter fence of the two. The principal timbers were 6 in. or 8 in. thick, but the stakes between were smaller and did not quite reach the ground; they were fastened with bush vines and supplejack to the sapling rails that ran along the stockade. The open spaces at the bottom of the fence were for

the defenders in the outer trench to fire through. The inner fence was a stouter structure of strong, green tree trunks set solidly in the ground, and with openings here and there for rifle-fire. And finally, an important thing in Maori eyes, there was the 'luck-stone' of the fort, the greenstone [nephrite] *whatu*. This was buried under the foot of a large stockade post, close to the right hand corner nearest the river."

The same authority describes the building of a Hauhau *pa* at Motu-roa in the 'sixties'—see *The Adventures of Kimble Bent*, p. 199. "There were two rows of palisades; the outside one was the largest and strongest. For the heavy outer stockade, timbers from 8 in. to 12 in. in diameter were sunk solidly in the ground, forming a wall some 10 ft. high. Saplings were cut to serve as cross ties or rails to lash across the posts, and with supplejack and *aka* vines the whole were bound strongly and closely together.....This *pa* was completed in three days—stockaded, trenched, parapeted, and rifle pitted—ready for the enemy! Behind the strong tree-trunk stockade there were trenches and casemated rifle pits from which the defenders could fire between the lower interstices in the great war fence; behind the trenches again was a parapet from which a second line of Hauhau could deliver their fire over the top of the palisade. It was one of the strongest works yet constructed by the Maori.....Just within the stockade there was a small, roughly built *taumaihi*, or look-out stage, 10 ft. or 12 ft. above the ground, high enough to allow a sentinel to see well over the sharp pointed palisades, and to scan the approaches to the fort."

Our worthy renegade, Kimble Bent, remarks that the Tauranga-ika *pa*, near Wai-totara, (See Figs. **116**, **116**a **116**b, p. 300-301-302) was an even stronger place than that of Motu-roa—he says:—"It was of large size, fully defended with palisading, trenches, parapet, and rifle pits. It was between two and three chains in extreme length at the rear, with a somewhat narrower front.....Two rows of palisades, high and strong, were erected around the position; the posts, solid tree trunks between the larger stockade posts were filled in with saplings set upright close together, and fastened by cross rails and supplejack ties; these saplings did not rest on the ground, but hung a few inches above it, so that between them and the ground a space was left for the fire of the defending musketeers, who were enabled to pour volleys from their trenches behind the war fence on any approaching enemy with perfect safety to themselves. Behind the inner stockading was a parapet about 6 ft. high and 4 ft. wide, formed of the earth thrown out of the trenches. The interior of the *pa* was pitted everywhere with trenches and covered ways, so that in the event of attack, the defenders could literally take to the earth like rabbits, and live underground secure from rifle fire, and even from artillery. The place was a network of trenches with connecting passages, roofed over with timber, *raupo*, reeds and earth. To any assault that could be delivered by the Government forces then available, the fort was practically impregnable.

"At one angle of the *pa* the Hauhau garrison erected a roughly timbered watch tower about 35 ft. in height.....There were two gateways in the rear stockading, giving access to the bush."

Mr. W. H. Skinner has been good enough to interview Kimble Bent for us, and obtained from him the following notes concerning *pa* entrances, etc., as observed by him in the 'sixties.' Bent was a deserter from a British regiment who joined the hostile natives and lived many years with them, assisting them in their labours of fort building, etc.

Bent states that the item used as a gate or door to close the narrow entrance to a *pa* in his time was a kind of hurdle consisting of two stout stakes on which was built a frame closely interlaced with supplejack vines. When not in use this stood up against the palisade close at hand, so that it could readily be placed in position and there lashed.

Bent gives a sketch of the Okotuku *pa*, which he helped to construct, and which was attacked by a force under General Chute on January 4th, 1866. The defences consisted of an outer stockade, inside which was a trench, inside that a *maioro* or earthwork bank on which stood the inner stockade. Inside the enclosed space, near one end, was erected a *taumaihi*, tower or scaffolding

of several decks or platforms. There were two entrances to the fort, on opposite sides. The front or main entrance was defended by an outer work, and, in passing through the gateway one entered a narrow passage or lane defended on both sides by palisades, which had to be traversed ere one entered the open space of the enclosure.

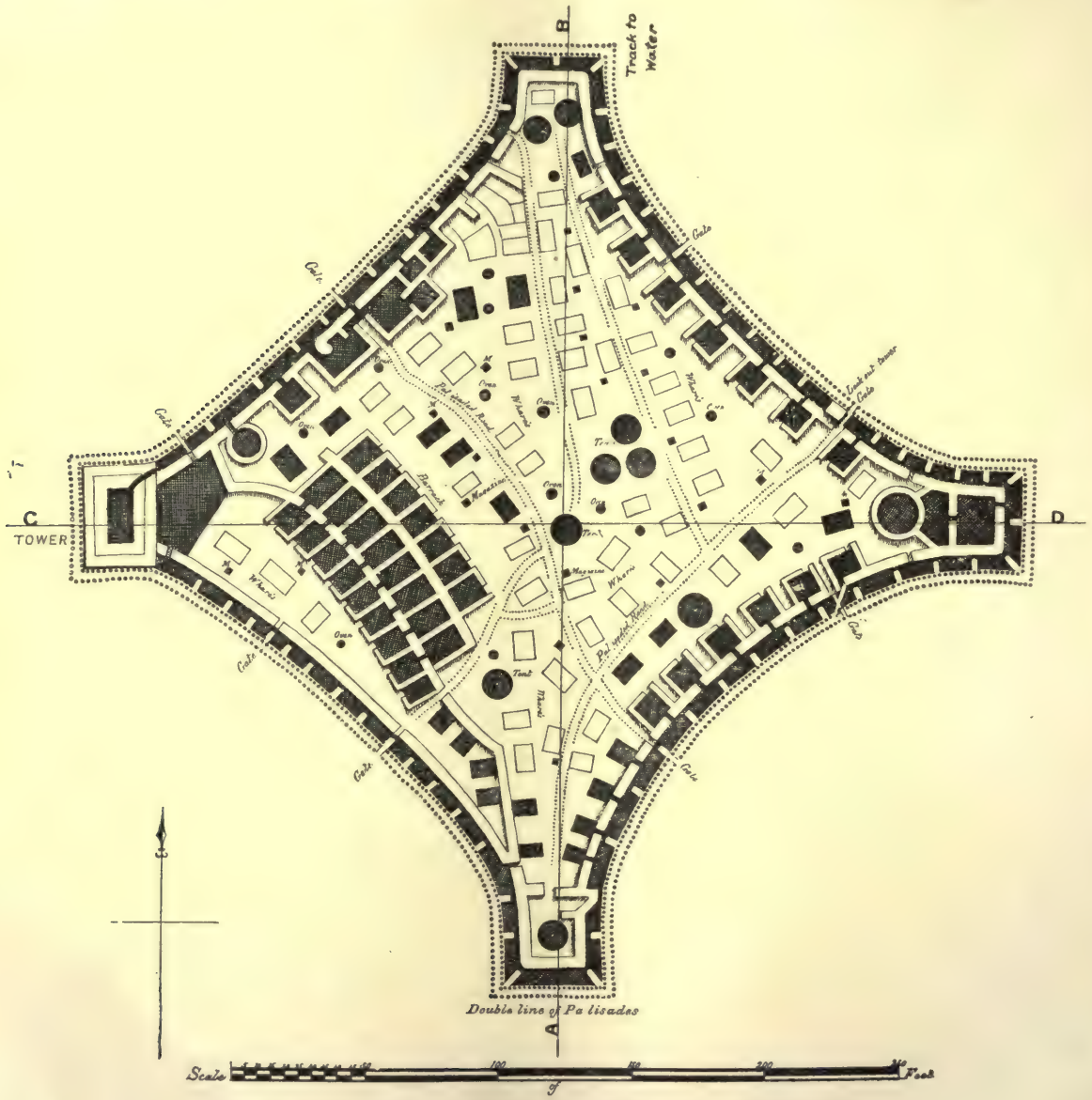


FIG. 116.—TAURANGA-IKA PA. A MAORI STRONG-HOLD OF THE LATTER "SIXTIES."

See p. 299.

Bent further stated that, in the Taranaki district, the natives applied the term *taumaihi* to both timber platforms or towers and earthen mounds used as coigns of vantage.

Of the O-hine-mutu *pa* at Roto-rua, in 1859, Dr. Hochstetter says—"O-hine-mutu still bears to some degree the features of an old Maori *pa*. The dwellings of the chiefs are surrounded with enclosures of pole fences, and the *whare* [houses] and *whare-puni*, some of them exhibiting very fine specimens of the Maori order of architecture, are ornamented with grotesque wood carvings."

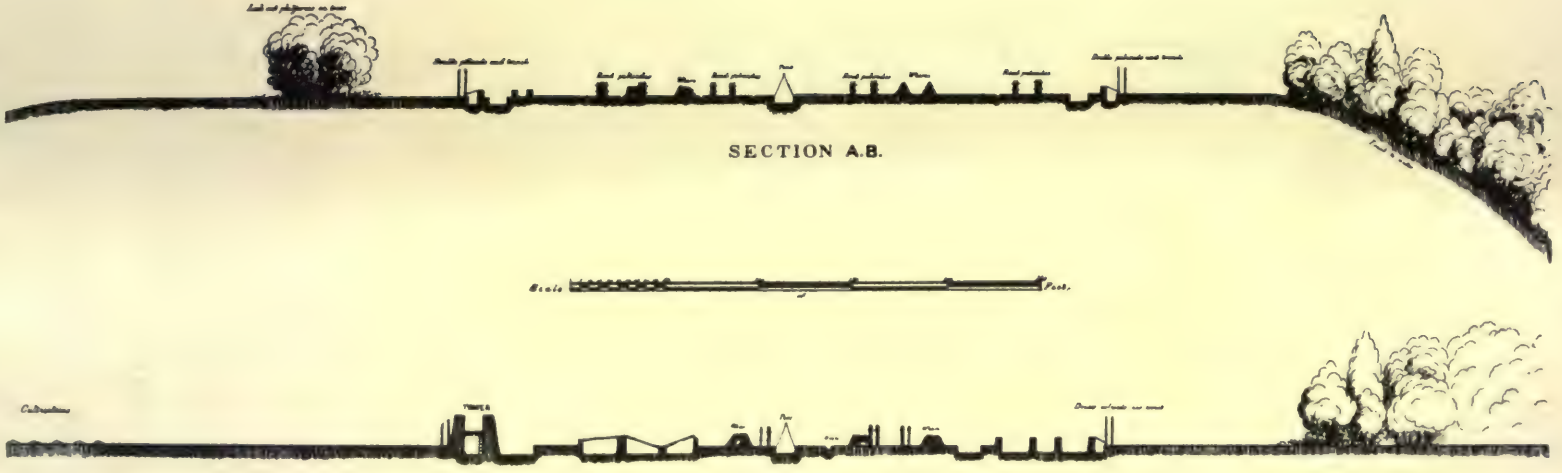


FIG. 116A.—CROSS SECTIONS OF TAURANGA-IKA PA.

See p. 299.

In 1867, Parewa-nui, at Rangitikei, was still a stockaded village, according to Dilke's *Greater Britain*.

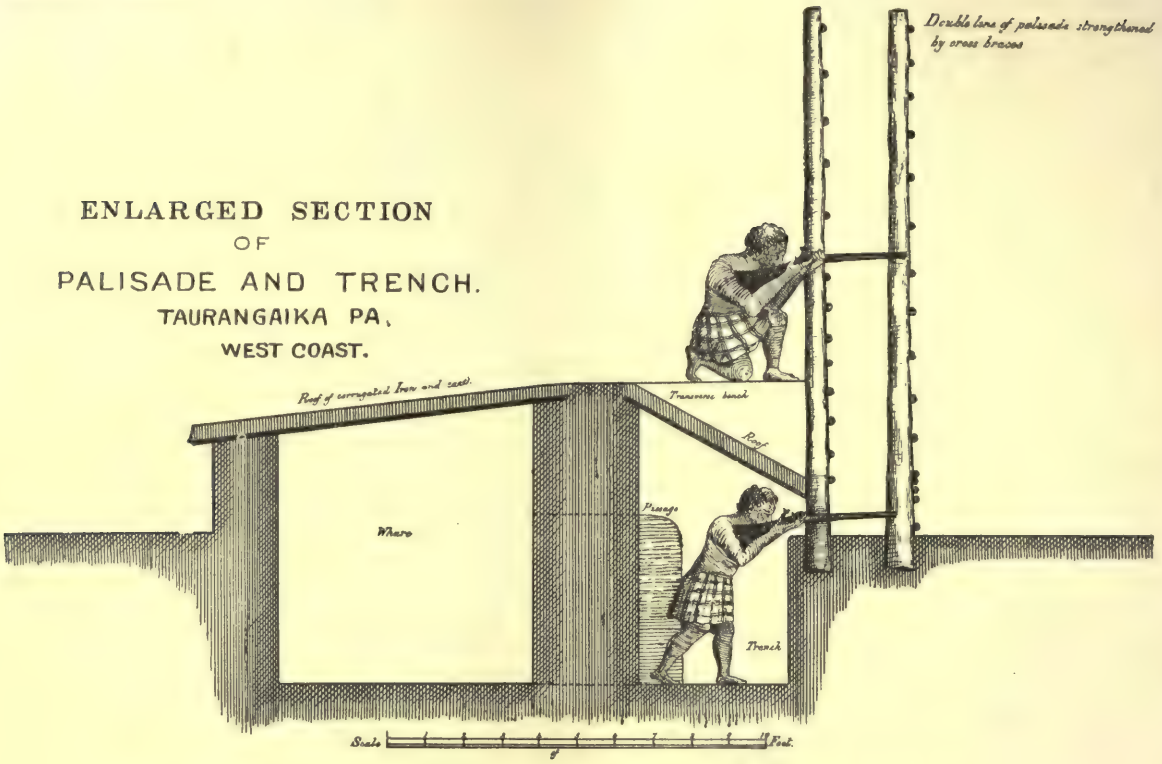


FIG. 116B. See p. 299.

In a letter written in April, 1840; the late Mr. Mantell gives a brief description of the *pa* that stood at the mouth of the Wai-whetu stream, Wellington, in those days....."All the houses are surrounded by peion [?] stakes, close together, about 3 in. or 4 in., or more, thick, and 15 ft. high. The higher ones, for they are of various heights, and few straight, are constantly carved at the top into heads, etc.; so are the gate posts."

Brees gives the following description of the Pipi-tea *pa* at Wellington, as it was in the early 'forties' of the 19th century:—"There is a *pa* at Pipi-tea Point enclosed with stockades..... The *pa* is divided into a number of courtyards and alleys by stockading, and each family has its own apartments.....The natives generally live together in small fortified villages, called *pa*, which are enclosed with stockades and trenches. They are sometimes built of great strength, and on elevated spots. These *pa* frequently contain from one to two thousand Maoris; they consequently comprise a large number of sub-divisions and alleys, as each family has a separate enclosure, in which one or more huts are built. Low stiles are laid across the entrances..... The name of *kainga* is given to an unenclosed settlement."

The various *pa* of Ngati-Awa about Wellington were very poor specimens, being protected merely by palisading, and most unlike the strongly fortified places of earlier times, with their great earthworks, and massive stockades. The population of villages given above is excessive for that period.

Angas speaks of the various *pa* Maori seen by him at Wellington in the 'forties.' These so called *pa* were not really fortified places, they were merely villages surrounded by very inferior palisading which could scarcely be dignified by the name of stockade. They had no earthworks and no system of strong stockades such as were seen in the old time *pa*. The last occupation of genuine *pa* in the Wellington district was by Ngati-Ira, who were expelled early in the nineteenth century.

FIG. 117.—THE NATIVE VILLAGE AT TAUPO (PLIMMERTON) IN THE "FORTIES." HAMLETS SURROUNDED BY A SINGLE INFERIOR STOCKADE.

After Angas.

See p. 304.

In Fig. **117**, p. 303, are seen examples of these inferior *pa,* hamlets protected by a single stockade that might be better described as a fence. This scene represents the site of Plimmerton as it appeared in the 'forties' of last century.

Of the Ngati-Awa *pa* at Pito-one, Wellington, as seen about 1860, Hodder writes in *Memories of New Zealand Life*:—"At the commencement of the Hutt valley is a Maori *pa* with divers strange *whare* and store rooms [*pataka*], fenced in with double palisading of 8 ft. or 10 ft. high, and lashed with native flax. Every three or four yards round the palisade are long posts, about a foot in diameter, ornamented with some grotesque carving at the tops."

Nga Tapa, Poverty Bay, 1869.

The following description of Ngatapa (or Nga Tapa) is taken from Colonel Porter's *Life of Ropata Wahawaha*:—"The hill fort of Ngatapa was the most picturesque and formidable of any the forces in New Zealand had to contend with during the war. It towered above all the high surrounding country, quite impressing one with its impregnable strength, commanding every possible approach of an attack. The front of the position was defended by three lines of parapets and trenches, each connected by covered ways. The first or outer line of defence was about 250 yds. in length, its wall being 8 ft. in height, each flanking angle terminating upon the scarped cliff at each flank of the fort. The second line of parapet was about 10 ft. in height, and the third, protecting the houses upon the summit of the hill, was at least 16 ft. high, surmounted with sand bags, or rather Maori kits [baskets], in approved European style, between which were loopholes for firing. These sand bags were no doubt adopted by Te Kooti in the emergency of a hasty defence, not having time to erect the usual Maori palisades, found by experience to be so effective in repelling assault by storming. The whole fort covered a considerable area of ground, and the natives say that it was in generations gone by the site of an old *pa* of their ancestors," See Fig. **118**, p. 305.

The Modern Maori Village.

The accompanying view of the village of Koriniti (Corinth) on the Whanganui river was apparently taken in the 'nineties' of last century, perhaps later. This place was occupied about the year 1845, or a little later, when the local clan, Ngati-Pamoana, abandoned the old Operiki *pa,* with its earthwork defences, and took to the open life. The old *pa* is a picturesque place situated on the brow of a cliff; the modern village is on a low lying river flat. In this view we see that stockades are no more, being replaced by light fences that are merely required to be pig-proof. Some fourteen modern looking places constructed of sawn timber are seen, several of which are elevated storehuts. The large house to the left is the guest house and show place; the open space before it is the *marae* or plaza whereon visiting parties would be received. See Fig. **119**, p. 306.

Already this aspect of Koriniti has passed away, and the old style of thatched huts is a thing of the past.

Maori Rifle pits near Whakatane.

A few rifle pits used by the Hauhau hostiles in the 'sixties' when they attacked a palisaded village of the Ngati-Pukeko tribe near Te Poroporo, Whakatane district, are still extant by the side of the road to Ruatoki. These were excavated at the base of the hill slope, the line of fire being across the flat. Each consists of a small shelter pit just large enough to contain one man, with a short entrance trench at right angles to the shelter pit. See Fig. **120**, p. 307.

Fighting Stages at the Chatham Islands, 1839.

Major Heaphy made the following notes concerning the curious towers at Waitangi:—"This is the only instance that I know of fighting stages or towers being built, although in the old times the Maoris used to have stages somewhat like balconies overhanging their *pa* wall from which they could sling stones or throw spears at their assailants.

"The stages shown in the sketch were built at Waitangi, at the Chathams, by Maoris who had migrated thither and then quarrelled among themselves, after nearly exterminating the Moriori or original inhabitants of the islands. See Fig. **34**, p. 79.

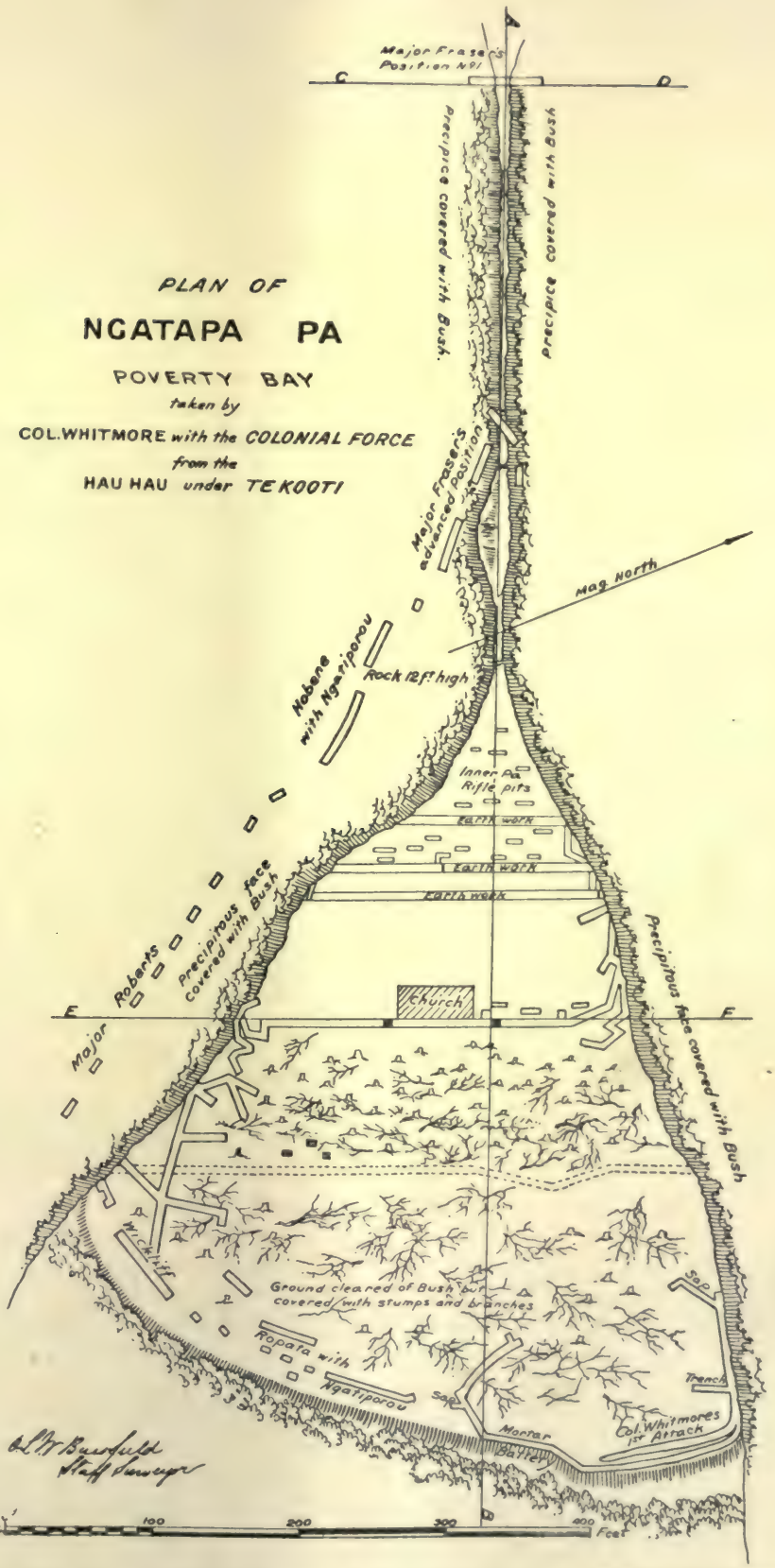


FIG. 118.—NGA TAPA. A FAMOUS STRONGHOLD OF HOSTILE NATIVES IN THE POVERTY BAY DISTRICT. Taken by Colonial Forces in 1869. See p. 304. [*Plan by O. L. W. Bousfield.*

FIG. 119.—THE VILLAGE OF KORINITI, WHANGANUI RIVER. ILLUSTRATES THE OPEN VILLAGE OF LATE YEARS.

[*Muir & Moodie, Photo.*

See p. 304.

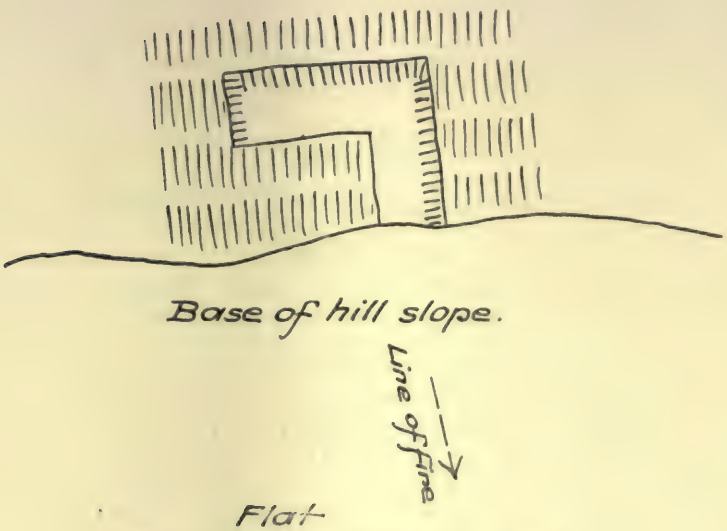


FIG. 120.—FORM OF RIFLE PITS AT WHAKATANE.

See p. 304.

"The *pa* with the higher tower was built in order to besiege the people in the middle *pa*. Each story of the tower was from 10 ft. to 12 ft. in height, and from the summit the assailants fired down into the besieged place. The besieged built a tower also, but from lack of material its dimensions were inferior to the other. There were no earthworks to speak of, probably on account of the nature of the hill, which was chiefly of sand. Covered ways led down from the *pa* to the waters' edge. Of a night the besieged could obtain fresh water from near this way."

Part VI.

FORTIFIED VILLAGES OF POLYNESIA, MELANESIA, ETC.

CONTENTS.

The fortified hill peaks of Rapa Island. Fortified places of Tonga. Mariner's account. Remarks by Captain Erskine; by Pritchard; by Rev. T. West; by Williams; by Captain Berry. Maori devices employed. Tahitian places of refuge. Fortified places of the Marquesas. Remarks by Porter; by Forster; by Cook. Maori features in Marquesan forts. Hawaiian forts and refuges. Stockaded villages of Samoa. Strongholds of Tongan raiders at Samoa. Fijian forts. Descriptions by Basil Thomson, Williams, Commodore Goodenough, Rev. A. Webb, Wilkes, Seeman, and Captain Erskine. Fijian hill forts resembled the *pa maori* of New Zealand. Fortified islets at Malayta. Hill forts of Solomon Isles. Fortified islet at Taumako. Fortified villages of New Guinea. The sloping fighting stage of the Maori is seen in New Guinea. Fortified places of the Caroline Group; of Sumatra; of Borneo; of the Hurons. Old fortified positions most numerous in New Zealand. The *pa maori* not a common feature of Polynesia. The unknown earliest settlers of New Zealand. The origin of the *pa maori* as a field for inquiry.

IN this division of the paper are brought together scattered notices of fortified places in the isles of Polynesia and Melanesia. Those of Fiji and Tonga most closely resemble the *pa maori*, but it seems fairly certain that the Tongans acquired the art of constructing such places from the Fijians. The strongholds of Rapa island still await description, while in the Society Isles fortified places seem to have been little used, and we hear of no earthworks there. The fighting stage appears at Fiji, at Tonga, in the far away Marquesas, and in New Guinea. The Fijian forts are the most interesting of the island series for purposes of comparison with Maori types, so far as I am aware, but it seems probable that some interesting features of the New Zealand-Fijian type of defensive works will be found to pertain also to parts of New Guinea.

The Rapa Island Forts.

The following notes on the stone erections of Rapa Isle are taken from the account of Vancouver's voyage:—"The tops of six of the highest hills bore the appearance of fortified places, resembling redoubts, having a sort of blockhouse, in the shape of an English glass house, in the centre of each, with rows of palisadoes a considerable way down the sides of the hills, nearly at equal distances. These, overhanging, seemed intended for advanced works, and apparently capable of defending the citadel by a few against a numerous host of assailants. On all of them we noticed people, as if on duty, constantly moving about." This was in 1791.

An account of the stone forts of Rapa Island by Captain J. V. Hall, was published in the first volume of the *Transactions of the New Zealand Institute*. Captain Hall's remarks are as follows:—"There are curious remains of apparently fortified places at Rapa, said to be the defences of the earlier warlike times. On the summits of many of the steep hills are to be seen these square fortresses, some of very elaborate construction; but what is very singular, they are mostly solid within. The stones are well squared, of very large size, and well cemented. Around or on the top of one in the interior are still the bones and skulls of a number of warriors to be found, who, they say, were starved out by their opponents."

In the face of later evidence the above account is seen to be quite untrustworthy. The well squared and well cemented stones do not exist, neither do the symmetrical structures of Captain Hall's illustrations.

Ellis, who was at Rapa in 1817, simply says:—"Fortifications crown the summits of many of their hills; these are so constructed as to render them impregnable by any means which the assailants could bring against the besieged."

"The heights of Rapa are crowned with veritable forts, which recall the *pa* of New Zealand. These constructions, dating from a considerable antiquity, are composed of platforms built up by heavy stones and earth; and the enclosures furnished with parapets measuring about twelve metres in length by ten wide. At their bases one finds stone axes and other tools of ordinary use or for defence. The people built their houses in the neighbourhood, and retired to the fortresses at the least alarm."—*Journal of the Polynesian Society,* Vol. 19.

The following notes on the stone forts, so called, of Rapa Island, were written by Professor Macmillan Brown, who visited that island in 1917:—"I climbed to the highest fort, a little over 2,000 feet above the sea, in order to see its construction. It was a simple mound built up of lava slabs which had by long infiltration of some adhesive element almost solidified into the appearance of a natural rock. The source of them was apparent all along the slopes of the mountain, landslips and weathering had broken off the lips of the thin beds of lava into convenient flat forms, and a little manipulation with stone chisels and pounders would shape them into the squares and rectangles needed to make the mound. A neighbouring height was crowned with a similar mound that rose steeply into a round tower more than twenty feet high. But away in the distance and across the harbour I could see the outlines of much more elaborate forts, with terrace above terrace, parapets and moats, and in almost every case there rose above all a similar solid round tower which was evidently meant as an outlook into the valleys beyond. These forts were, in short, specimens of the rude megalithic masonry that I afterwards saw in the Society Islands, and still more in the Marquesas, consisting of great stones roughly squared to fit into their place without cement."

It appears that, in former times, the natives dwelling in the different valleys were often at war, and that the stone forts were constructed on the saddles or passes between the different valleys. Our knowledge of these defences is still in a most unsatisfactory stage; we need definite and precise information concerning the terraced defences, parapets and moats. The thorough observer and recorder is much needed at Rapa Island.

The later information concerning the fortified positions on Rapa Island given by S. and K. Routledge in vol. LI. of the Royal Anthropological Institute finally disposes of the remarkably symmetrical, elaborate, and well preserved works that appear in the illustrations in vol. I. of the *Transactions of the New Zealand Institute.* The account referred to describes the hill forts of that small lone isle as somewhat resembling some of the hill forts of our North Island. Hill peaks were carved into terrace formations of varying sizes, with the peak standing as an isolated *tihi* or citadel like stronghold. Some twenty of these old forts were counted, and others were unseen. The excavated terrace formations are contained by stone walls or stone faced scarps, the rough pieces of volcanic stone being utilised for the purpose. The shapely structures built of squared stones cemented together of Captain Hall's account existed only in his brilliant imagination.

Scarps presenting a steep batter have been formed in these hill peak refuges by means of excavation and rough stonework. A few low breastworks were seen. In some places a trench had been cut across a ridge, a narrow section being left across it to serve as a pathway, a New Zealand usage. The forts cover from one to three acres. They were used in pre-European times when warring factions of natives sought to destroy each other.

Mr. Stokes of the Bishop Museum has made a careful survey of these Rapa Island strongholds, and the results of his work will doubtless appear ere long.

The Tongan Forts.

In the following account of the Tongan forts it will be seen that they closely resembled the *pa maori* of New Zealand in the nature and disposition of the defences, and that such methods were probably learned from the Fijians.

The following remarks on the fortified places of the Tongan Group are taken from Mariner's work:—"The fortress of Nioocalofa [? Nukualofa] is situated on the west coast of the island, about one hundred yards distant from the water's edge, and occupies about four or five acres of ground. It consists, in the first place, of a strong wall or fencing of reeds, something like wicker work, supported on the inside by upright posts, from 6 in. to 9 in. in diameter, and situated a foot and a half distant from each other; to which the reed work is firmly lashed by tough sinnet made of the husk of the cocoa nut. This fencing is about 9 ft. in height, the posts rising about a foot higher: it has four large entrances, as well as several small ones, secured on the inside by horizontal sliding pieces, made of the wood of the cocoa nut tree. Over each door, as well as at other places, are erected platforms even with the top of the fencing, supported chiefly on the inside, but projecting forward to the extent of two or three feet; these platforms are about 9 ft. square and situated 15 yds. distant from each other; and as they are intended for the men to stand on, to shoot arrows, or throw down large stones, they are also defended in front, and half way on each side, by a reed work 6 ft. high, with an opening in front, and others on either side, for the greater convenience of throwing spears, etc. The lower fencing has also openings for a similar purpose. On the outside is a ditch of nearly 12 ft. deep, and as much broad; which, at a little distance, is encompassed by another fencing similar to the first, with platforms, etc., on the outside of which there is a second ditch. The earth dug out of these ditches forms a bank on each side, serving to deepen them. Opposite each large doorway, there is no ditch dug. The inner and outer fencings are ornamented profusely with white shells. Some of these fortifications are square, others round. That of Nioocalofa was round."

These fortified places seem to have been termed *kolo* (Maori *koro*) by the Tongans, for, further on in his narrative, Mariner says:—"Finau and his army landed at Nukualofa for the purpose of rebuilding the *kolo,* or fortress.....a vast number of hands was employed, and in two days the building was finished.....During the time this was about, several of the men got dangerously wounded by falling into the *lovosas* and *sokies,* of which there were several on the land side of the *kolo. Lovosas* are pitfalls, dug 5 ft. deep and 4 ft. broad: several stakes of bamboo are driven into the bottom, and sharpened. *Sokies* are smaller holes, with one stake in, and large enough to admit a man's leg. These pits are covered over with slender sticks concealed from sight by plantain leaves and earth."

At another place in his narrative, he writes:—"The fortress, on the top of a steep rising ground, as seen from the canoes, presented a most formidable and warlike appearance: its extent seemed enormous, and the tops of the white reeds, which were seen at a distance above the banks of red clay.....On the top of the banks [earthworks] a number of warriors, armed with clubs and spears, were running to and fro....."

In yet another place, he speaks of one of these fortified places being destroyed by fire. Four hundred men rushed the place, each being provided with a spear having a lighted torch fixed at about a foot from the point of it—"At a signal every man threw his flaming weapon at the fencing, or into the garrison." Thus the place was reduced by fire.

Of the Tongan forts Captain Erskine wrote in 1840:—"An hour's walk took us to the village, which is surrounded by a ditch, nearly dry, of about 12 ft. wide, and protected by a mud wall of the same thickness, and 15 ft. in height. This wall is pierced by loopholes for musketry, made of hollow wooden pipes, and is strengthened internally by trunks of cocoanut trees, driven firmly into the ground, the whole being surmounted by a high reed fence. The gate by which we entered is in about the centre of the eastern face, and is defended by a kind of portcullis and flank defences of rough logs, pierced with loopholes."

Here we plainly have a gun-fighter's fort, with a stockade on the top of the dyke or earthen wall. It seems, however, that the *pa* of Tonga was modelled on those of Fiji of pre-European times, with which group the Tongans had long been in communication.

According to Pritchard, author of *Polynesian Reminiscences,* the Tongans learned some of their knowledge of fortification from Mariner, who lived among them for years. Pritchard says: "Having been taught by Mariner, the Tongans possess a better knowledge of fortification than the Samoans, though not better than the Fijians, who are self-taught in the science. In Fiji and Tonga the strength of a fort consists in the depth and breadth of the moat, while in Samoa (except where they have borrowed from the Tongans) a rude palisade or log fence is the sole protection."

The Rev. T. West, author of *Ten Years in South Central Polynesia,* remarks—"The Tongans were in the habit of constructing very complete, strong, and well arranged fortifications, from whence their fighting excursions were made. In besieging such places, they well understood the method of approaching by trenches, and rifle pits, defended by earthworks and strong stockades."

Williams tells us that, when the Tongans invaded Tongatapu, the folk of that isle encamped upon the only hill on the island, "and there entrenched themselves by digging two deep ditches round it, the earth of which formed embankments that remain nearly perfect to the present day. Upon the top of these they erected strong reed fences, and, thus fortified and entrenched, they awaited in confident security the attack of the invaders."

Captain Berry, in his Reminiscences, makes a few brief remarks on a Tongan village seen by him early in the 19th century:—"The fortification consisted of a double bamboo stockade. The entrance gate [? passage] was long and crooked, and well supplied with bars. The city was compactly built together, but the streets were narrow and crooked."

In these descriptions we see well known and old devices of the Maori and Fijian folk. The earthen ramparts 15 ft. in height on the top of which defenders took their stand, the fighting stages projecting outward beyond the stockade for the defence of gateways and other parts, and furnished with breastworks, were common Maori devices. We shall meet with them again in Melanesia. There is no evidence to show that our Maori folk ever employed caltrops in warfare.

Mariner's own evidence shows us that the Tongans were well acquainted with such defensive works as those of Fiji and New Zealand on his arrival in the group. They may possibly have gained from him some hints connected with gun fighting.

Tahitian Strongholds.

In describing war customs of the Tahitians, Ellis says:—"Their places of defence were rocky fortresses improved by art, narrow defiles, or valleys sheltered by projecting eminences.. .....Sometimes they cut down trees and built a kind of stage or platform, called *pafata,* projecting over an avenue leading to the place of refuge. Upon this they collected piles of stones and fragments of rock, which they hurled down on those by whom they were attacked. In some of the Hervey Islands they planted trees around their places of encampment, and thus rendered them secure against surprise. These enclosures they called *pa,* the term which is used to designate a fort in the Sandwich Islands.

"If those who had been routed on the field of battle were allowed by their pursuers time to wall up the entrances of their places of refuge, they were seldom exposed to assault."

These were natural fortresses, with sometimes a wall built across a gulch or pass. Purely artificial fortifications do not appear to have been numerous in Eastern Polynesia, and Ellis remarks that the best specimen was probably the one at Maeva, in Huahine, of which he says: "Being a square of about half a mile on each side, it encloses many acres of ground well stocked with breadfruit, containing several springs, etc.....The walls are of solid stone work,, in height 12 ft. They are even and regularly paved at the top. On the top of the walls (which in some places were 10 ft. or 12 ft. thick), the warriors kept watch and slept. Their houses were built within.....There were four principal openings in the wall, at regular distances from each other.....[which] during a siege were built up with loose stones."

Miss Henry, in writing of the Tahitians, remarks:—"Their fortifications were intricately made of stones and earth heaped over boughs of trees." It is, however, clear that our *pa* of Maoriland was not a Tahitian institution.

Forts of the Marquesas Group.

In Porter's account of the Marquesas, visited by him in 1813, occurs the following:—"Gattanewa, I was informed at the time of my landing, was at a fortified village, which was pointed out to me, on the top of one of the highest mountains. They have two of these strong places, one on the top of the aforesaid mountain, the other lower down the valley, and guarding one of the principal passes. The manner of fortifying those places is to plant closely on end the bodies of large trees, of 40 ft. in length, securing them together by pieces of timber strongly lashed across, presenting on the brow of a hill, difficult of access, a breastwork of considerable extent, which would require European artillery to destroy. At the back of this a scaffold is raised, on which is placed a platform for the warriors, who ascend by means of ladders, and thence shower down on their assailants spears and stones. The one at which Gattanewa now was, is situated near a remarkable gap, cut through the mountain by the natives, to serve as a ditch or fosse, and must have required much labour in the execution."

The same writer, in describing a fight he had with the warriors of Typee [Taipi], on the same island, states that:—"In their rear was a fortified village, secured by strong stone walls." In another place he describes one of these forts as follows—"I never had supposed these islanders capable of contriving and erecting a work like this, so well calculated for strength and defence. It formed the segment of a circle, and was about fifty yards in extent, built of large stones, 6 ft. thick at the bottom, and gradually narrowing at the top to give it strength and durability. On the left was a narrow entrance merely sufficient to admit of one person's entering, and serving as a sally port. But to enter this from the outside, it was necessary to pass directly under the wall for one half its length, as an impenetrable thicket prevented the approach to it in any other direction. The wings and rear were equally guarded, and the right was flanked by another fortification of greater magnitude and equal strength and ingenuity.....This fortification appeared of ancient date, and time alone can destroy it." The Taipi clan seem to have had a number of such redoubts at that time.

Of a Marquesan stronghold seen from a distance, Forster wrote in 1774:—"Several vallies .....lead up from two beaches to the very summit of the mountain, which appears excessively steep. Along its uppermost edge we saw a row of stakes or pallisadoes, closely connected together, like a fortification, within which, by the help of our glasses, we discerned something like huts. These places we supposed to be what the Spaniards have called intrenchments; but they bore a great resemblance to the hippas [*pa*] of the New Zealanders, which are commonly situated on high ridges, and surrounded with palisades."

In his account of the Marquesas, Captain Cook writes:—"They seemed to have dwellings or strongholds on the summits of the highest hills. These we only saw by the help of our glasses, for I did not permit any of our people to go there, as we were not sufficiently acquainted with the disposition of the natives, which, I believe, is humane and pacific."

In these Marquesan strongholds we recognise the fighting stages and narrow protected entrance of the *pa* of New Zealand, also the heavy stockade, but, apparently, the Marquesans did not employ earthwork defences as did the Maori.

Hawaiian Forts.

Ellis mentions an old Hawaiian fortified place that he visited:—"All that at present remains is part of the wall, about 18 ft. or 20 ft. high, and 14 ft. thick at the bottom, built of lava, and apparently entire. In the upper part of the wall are apertures resembling embrasures..... The fortification was probably extensive, as traces of the ancient walls are discoverable in several places; but what were its original dimensions, the natives who were with us could not tell. They

asserted, however, that the cavern of Raniakea [Rangiatea], if not the fort also, was formerly surrounded by a strong palisade."

This writer also remarks that, in time of war among the Hawaiians:—"Each party usually had a *pari* or *pakaua*, natural or artificial fortress, where they left their wives and children, and to which they fled if vanquished in the field. These fortresses were either eminences of difficult ascent, and, by walling up the avenues leading to them, sometimes rendered inaccessible; or they were extensive enclosures, including a cave, or spring, or other natural means of sustenance, or security. The stone walls around the forts were composed of large blocks of lava, laid-up solid, but without cement, sometimes 18 ft. high, and nearly 20 ft. thick. On the tops of these walls the warriors fought with slings and stones, or with spears and clubs repelled their assailants. When their *pari* was an eminence, after they had enclosed the avenues, they collected large stones on the edges of the precipices overlooking the paths leading to the fortification, which they rolled down on the heads of their enemies."

In a paper published in *Paradise of the Pacific*, July, 1911, the Rev. W. D. Westervelt, quoting a native authority, remarks:—"Kauwiki was a battle hill, a very strong place, good for rest in a hard fight. It was well fortified with a wall of *ohia* trees tied together by fibres of the *ieie* vine. Sling stones were piled on the summit, fresh water was just under the hill, and much *awa* was cultivated near it. This was the place for the people to assemble for safety, although it was not a *pu-honua*, or temple of refuge."

The following communication from the Rev. W. D. Westervelt of Honolulu, throws light on the Hawaiian use of the term *pa*, and on their fortified places:—

"The native word *pa*, in Hawaiian literature almost always refers to an enclosed place, and very seldom is the combination *pa kaua* (meaning fort) used. The 'battle enclosure' or *pa kaua* was a prominent term in Ellis' time because a large fort, stone walled and supplied with mounted guns, foreign style, had been built near the beach. A street running inland was called Fort Street (after it). This use of the word *pa* was intensified by the fact that the Russians had built a stone fort on the island of Kauai. These were real *pa kaua* [*pa taua*] or enclosures from which to fight. The Hawaiians did not have fortified villages like the Maoris, but they had battle hills, or fighting hills, which were sometimes fortified with stakes and stones, and were usually somewhat difficult of access. These were not called *pa kaua*, but *puu kaua*, or battle hills. I cannot recall any instance of earthworks like those we saw in New Zealand; the Hawaiians fought in the open."

Jarves, in his *History of the Hawaiian Islands*, also says that no fortifications were erected, but that non-combatants retired to natural strongholds on steep eminences, when fighting was going on.

The name *pa kaua* is our Maori term *pa taua*, and *pari* or *pali* denotes a cliff. The remark concerning defenders being stationed on the top of a wall is of interest.

Stockaded Villages of Samoa.

In describing Samoan methods of conducting war, Missionary G. Turner remarks—"Around the village where the war party assembled, they threw a rough stockade, formed by any kind of sticks or trees cut into 8 ft. lengths, and put close to each other, upright, with their ends buried 2 ft. in the ground. The hostile parties might be each fortified in this way not more than a mile from each other, and now and then venture out to fight in the intervening space, or to take each other by surprise at weak or unguarded points."

In his work entitled *My Consulate in Samoa*, W. B. Churchward makes brief mention of several fortified places he saw on hills, and remarks that they were made by Tongans. In describing a trip made to Falelatai, he says:—"On arriving at the top [of a steep hill] we found evident traces of a parapet and ditch, no doubt the work in days of old of the Tongans, who at

one time held almost entire possession of Samoa, and portions of whose handiwork in fortifications and roads may be met with all over the island of Upolu."

Also, in his account of a trip made to Fale o le Fe'e, this writer says—"We came to what, in very old times, had been a fort, doubtless one of the many that the Tongan invaders erected during their invasion of Upolu in days gone by. It was situated as is usual on a narrow commanding ridge, running down steeply on both sides, the direct path being blocked by both parapet and ditch."

A communication received from Mr. J. B. Fleck, serving with the New Zealand Expeditionary Force at Samoa, gives some particulars of an old Tongan fortified post on the island of Upolu, at no great distance from Le Fale o le Fe'e. This place is situated on a ridge top at a place where its width does not exceed fifty yards and its two sides are unscaleable. Across this part of the ridge top has been excavated a fosse that is even now 10 ft. deep in some parts and is about 30 ft. wide from brow to brow; it probably contains a considerable deposit of humus and debris; the place is overgrown with bush. On the upper side of the fosse is a wall or rampart that is still some 8 ft. or 10 ft. in height. A short distance in front of the fosse is a raised structure of ovoid form, a platform built up with local boulders and having a ditch round it. Presumably this was an outwork, a sort of covering work. Past these defences the ridge widens out into a plateau like area, flat land over a mile wide, with a deep gully on either side. It seems probably that this place is the one mentioned by Mr. Churchward.

Of a modern Samoan fortified position seen in 1849 Captain Erskine remarked:—"It resembled somewhat a New Zealand *pa*, being of upright posts of cocoanut wood, with an external ditch, but of little strength. The entrance was tolerably well constructed, as a kind of circular bastion or redan, with flank defences and a few loopholes for musketry made of hollow wooden pipes, which they say are copied from the Tongans." Evidently in the purely Samoan defensive works there is little of interest.

THE MELANESIAN REGION.

Fortified Places of Fiji.

According to Basil Thomson the Fijians had something not unlike the simpler form of Maori *pa*, a custom of surrounding villages with an earthwork about 6 ft. high, surmounted by a stockade of reed fencing, or cocoanut trunks, and surrounded by a muddy moat, or, in some cases, a double or triple moat with earthworks between. This writer states:—"Almost every important hilltop in western Viti-levu is crowned with an entrenchment of some kind. Though there were generally from four to eight gateways, defended by traverses, and surmounted with a lookout place, some strongholds had but one gateway, and that so difficult of access as to be impracticable to the besiegers." Traverses seem to denote the use of firearms here.

Williams, in his *Fiji and Fijians*, speaks of native villages being fortified with an earth rampart, about 6 ft. thick, faced with large stones, surmounted by a reed fence or cocoanut trunks, and surrounded by a muddy moat. He also remarks that they had strongholds erected on precipitous places that were most difficult of access. "Some of these strongholds have, in addition to their natural difficulty of access, strong palisades and stone breastworks pierced with loopholes. Sometimes a fortress has only one gateway, with a traverse leading to it, but from four to eight entrances are generally found. At the top of the gateway, on the inside, there is sometimes a raised and covered platform for a lookout. The gates are formed by strong sliding bars inside; without, on either side, are substantial bastions. Visitors capable of judging give the Fijians credit for skill in arranging these several parts so as to afford an excellent defence even against musketry. The garrisons are often well provisioned, but ill-watered."

In the above account the loopholes, bastions and traverses look very much like a late innovation, since the introduction of firearms.

An interesting allusion to a Fijian fortified place appears in the Journal of Commodore Goodenough, as written by him in December, 1873. This fort appears to be situated on Wakaya, an island near Levuka. He writes:—

"December 3rd, 1873.—Believing Dr. Brower to be over at Wakaya, went over there..... He was in Levuka.....We went up to the highest point of the island. There is a regular fort, with double ditch, nearly circular, on top.....The foundation of a temple (square) and a round foundation still stand; it is curious as having been the stronghold of a party who used to plunder the richer land, and precisely like what we should call a British encampment..... .....The interesting part of this fortification is, that the lower ditch has a covered way extending from this hill to another along a ridge, and to two others in another direction, which shows a considerable advance in the science of fortification."

As usual, there is an irritating lack of explanation and detail in the above brief allusion, matter that might easily have been obtained at that time.

The same writer speaks of another fortified place, apparently near the Rewa river, as follows:—"January 22nd, 1874.—At Na Koro vatu.....went off to see the site of Soro vako velo; it came on in torrents of rain, but we went on and saw this fortified town, in which a great deal of art is shown in the construction, including a covered way from promontory to promontory, little outworks, etc. They held out here for two months, and their works were certainly not to be despised. The general plan seemed to be to take in every hill top, and to surround with bank, ditch, and wattled fence. The best ditches 8 ft. deep, the best bank 3 ft. high; the earth soon washed down. The fences in places of fern stem [? trunks of tree ferns], and in others wattled cane."

The following notes are from a paper on the hill tribes of Viti-levu, by the Rev. A. J. Webb, published in the *Report of the Australasian Association for the Advancement of Science*, 1890:—"Their villages were mostly perched on most inaccessible peaks and precipices.....These eyries were skilfully fortified with palisades and galleries for sharpshooters, which, with their well chosen strategic position, rendered some of them traditionally impregnable, and until the introduction of European arms of precision.....they were never taken. I have even seen fortified places on a plain so surrounded by moats, where the mud was armed with stakes and split bamboos, and so encompassed with clay ramparts and stout palisades line within line, that the very taking of them in purely native warfare was a very tedious or very fatal undertaking. I saw one village, called Waini-makutu, where the stream had been most ingeniously diverted into the circular moat, in which it was swirling round the town on its onward progress..... .....and thus formed a perpetual defence to the people. An officer in the English army, who had taken some of these forts of the hillmen, expressed to me his surprise at the skill and science of the engineering they displayed. Covered galleries and lanes, and curious platforms for sentinels and marksmen, were also features in these works."

The hill forts seem to have been of a different type to those situated on the plains. The wet moats of the latter were an unknown feature in Maori forts.

In Major Harding's Diary of the Na Dawarau Campaign of 1874, published in the *Transactions of the Fijian Society* for 1916, appears an account of an attack on a native stronghold having five tiers of earthworks backed by a strong bamboo stockade.

In his narrative of the U.S. Exploring Expedition, Commodore Wilkes gives us the following particulars concerning the fortified villages seen at Fiji:—

"The towns are usually fortified with a strong palisade made of breadfruit or cocoanut trees, around which is a ditch partly filled with water. There are usually two entrances, in which are gates so narrow as only to admit of one person at a time. The village of Waitora, about two miles to the north of Levuka, is justly considered by the natives as a place of great strength. This was visited by Messrs. Hale and Sandford, who give the following description of it: "It is situated upon a hill, and can be approached only by a narrow path along the sloping edge of a rocky ridge. At the extremity of this path is a level space of about an acre in extent,

which is surrounded by a stone wall, and filled with houses. In the centre is a rock about 20 ft. high, and one hundred feet square. The top of this is reached by a natural staircase, formed by the roots of a banyan tree.....Some of the principal towns are not fortified at all..... The fortifications of which we have spoken, whether palisades and ditch or stone walls, are constructed with great ingenuity, particularly the holds to which they retire when hard pressed. For these a rock or hill, as inaccessible as possible, is chosen, with a small level space on the top. Around this space a palisade is constructed of upright posts of cocoanut tree, about 9 in. in diameter, and about 2 ft. apart. To the outside of these wickerwork is fastened with strong lashings of sennit. Over each entrance is a projecting platform, about 9 ft. square, for the purpose of guarding the approach by hurling spears and shooting arrows. The gates or entrances are shut by sliding bars from the inside, and are defended on each side by structures of strong wickerwork, resembling bastions, which are placed about 15 ft. apart. When there is a ditch, the bridge across it is composed of two narrow logs. The whole arrangement affords an excellent defence against any weapons used by the natives of these islands, and even against musketry.''

In his description of the hot springs at Waicama, Savusavu, Wilkes says:—''On the hills behind the springs there has been one of the strongest forts in the Fiji islands. It has two moats, and in the centre was a high mound that had evidently cost much labour in its construction. These hills were bare of trees.''

In his account of an attack made by his company on the native village of Sualib, on Malolo isle, in 1840, the same writer remarks:—''Its defences evinced no little skill in engineering. A ditch 12 ft. wide and full of mud and water, surrounded the whole; next came a strong palisade built of cocoanut trunks, placed 4ft. or 5ft. apart, among which was here and there a living tree; this palisade was united by a fence of wickerwork, about 10 ft. high, so strong and dense all attempts to penetrate or even see through it were vain. Inside of the palisade was another ditch, recently excavated, the earth thrown up from which formed a parapet about 4 ft. in thickness, and as many in height. In the ditch the defenders sheltered themselves, and only exposed their heads when they rose to shoot through the loopholes left in the palisade.''

In speaking of the Fijian town of Rewa, as seen by him in 1840, the above writer states:—''It is everywhere intersected by narrow lanes, closely shut in with high reed fences.''

In his work on Fiji, Seeman, who sojourned in that group in 1860-61, gives the following brief notes on fortified places. Of one on an isle near Viti-levu, he remarks:—''There may be about one hundred inhabitants, who lived in a town defended by a deep ditch and high earthen mounds.''

In describing an attack on Solevu, on the south side of Vanua Levu, by an allied force of Fijians and Tongans, he writes:—''The allied forces appeared before the town of Solevu, which, being strongly fortified, held out against the invaders three whole months. At the end of that time, the besieged were in extreme want of fresh water, the besiegers having diverted a rivulet supplying the town from its course, and all the wells being dry. Unable to hold out any longer, Solevu surrendered.''

Again, in describing Fijian life, he writes:—''The houses are never isolated, but are crowded together in towns, or *koro,* which are frequently surrounded by a ditch and an earthen mound.''

In T. R. St. Johnston's work on the Lau Islands, which lie east of Fiji, mention is made of hill forts on the isles of Ono and Doi.

Introduced features, owing to the acquisition of firearms, were noted in the Fijian hill forts, but the old time usage of stationing defenders on elevated stages erected over each entrance was a pre-gun form of defence. These, and the sliding bars to close entrance passages, were common features of Maori forts, as also was the projection of the platform outside the line of stockade mentioned by Wilkes. This is the *kotaretare* of the Maori. These fighting stages were also

employed in New Guinea. The rampart surmounted by a stockade, fosses, stone faced ramparts, sliding bars across narrow gateways, and covered ways were also features of old Maori forts.

In his account of the cruise of H.M.S. Havannah in 1849, Captain Erskine gives us a few remarks on fortified villages of Fiji:—"During my walk on shore I had visited the fortified village, or *kolo*, of Levuka, about a mile distant from our landing place, but within a few hundred yards of the beach. It consists of a considerable number of huts, huddled together without regularity, and enclosed by a mound of earth 3 ft. in height, which is surmounted by a reed fence; the whole being surrounded by a narrow and shallow ditch, serving both as a defence and a garden for *taro*. The ditch, as at Lakemba, is crossed on the trunk of a cocoanut tree, thrown across it as a drawbridge, and the mound is entered by a low gate, which can be hastily barricaded with timber."

Apparently this was an inferior place, and the following description of Nateva Savana portrays a much stronger position:—"It was a large town, well fortified with wood and stone walls. Outside of these was an embankment about 12 ft. high and almost as many thick, and a deep moat entirely surrounding everything, leaving one narrow entrance which was approached by a path from the beach, very narrow, with a deep ditch on each side full of water. All along the bottom of the ditches were stuck stakes sharpened at the upper end and hardened in fire, so that if you fell into either ditch these stakes would enter the body, but on account of the thickness of the water they would not be observed."

So far as we are aware such defences as these pointed stakes were never employed by the Maori folk. The dimensions of the wall or rampart given above seem to show that the defenders were stationed on the top when repelling an assault, a mode of defence practised also by the Maori, as we have already shown.

We are also told in the above work, that some of the Fijian villages situated on level land were surrounded by a defensive maze of ditches. The narrator was unable to find his way through this maze in an endeavour to reach the village of Tokotoko:—"I was surprised to see the intricate, crooked paths that led round innumerable moats and ditches so constructed as to baffle and perplex the enemy. These ditches extend at least four miles round and beyond the suburbs of Tokotoko, and have taken, I should say, the labour of this last century to complete. One can see the remains of old ditches for seven or eight miles, and in fact all over that part of the land which is low and affords no natural defence. At last I reached a plantation, but, for the life of me, could not get out of these winding paths so as to make any headway in a straight direction, but invariably came out at the same place I started at."

Of another fortified village about four miles from Tokotoko, he remarks as follows:—"I saw nothing worth noticing except the neatness of the fences inside of the moats, which run from one end of the town to the other, quite straight and parallel to each other, forming narrow streets or broad paths, with other fences crossing them at right angles, forming numerous cross roads and dividing the whole town into squares and parallelograms, with stiles to enter each."

This sub-division of a village resembled that of a *pa maori* save that, in the latter case, the paths and fences were crooked and showed no regular plan.

Malayata Island.

In his *South Sea Islanders* (London, 1893) W. T. Wawn mentions two fortified islets in a harbour at Auki, Malayta Island, about twenty miles S.S.E. of Cape Astrolabe:—"These fortified islets are, I think, peculiar to Malayta, and are numerous along the northern coast. They are, originally, sandy reef islets, close to the coast, elevated two or three feet above the level of the highest tides. Round the edges of the coral foundation of the islet walls have been built up of coral blocks, rising some four feet above the interior surface of the islet. Every here and there are openings in the wall, which at a distance resemble embrasures, and into which canoes can be floated. Once inside they can be hauled up safely amongst the low thatched houses, which are crowded close together beneath the cocoanut trees, with very narrow footways between them."

Solomon Isles.

In his work on the Western Pacific, W. Coote speaks of fortified places on the Island of Ysabel, Solomon Group:—"Other fortresses there are upon this island.....they are perched upon bold rocky peaks, and the approaches are in some cases cut off by the construction of large dykes or fosses, upon which a most surprising amount of labour must at one time have been expended."

Taumako Island.

Torres, who sailed with Quiros in 1606, states that at Taumako, near Santa Cruz, a small fortified isle was seen:—"At a small distance from the ships was a small islet situated within the reefs, upon which the natives with much labour had formed a platform a full fathom above the level of the sea. This place.....was intended to serve as a fortress for the natives to retire to.....on it were about 70 houses....." Torres describes it as "a town surrounded by a wall, with only one entrance."

New Caledonia.

In New Caledonia are said to be the remains of many old hill forts, of which, however, I have seen no description.

New Guinea.

Mr. J. P. Thomson, in his work *British New Guinea,* gives some information concerning a fortified village in that region:—"The village of Merani is located on the left bank of the Domara-wai river, and surrounded by a strong palisade of an oval form some 75 yds. long and 30 yds. broad, constructed of 6 in. saplings some 15 ft. long, deeply fixed into the ground about 2 in. apart, and kept securely in position by crossbars, to which they are fastened about 10 ft. from the ground. This fortification is entered by four openings, which in position correspond with the cardinal points of the compass, and these are effectually closed by horizontal sliding bars.....The west end of the village is guarded by two tree houses, with fighting platforms, constructed in large trees about 80 ft. high.....The eastern side of the stockade also possesses a tree house overlooking the gate."

Several writers refer to the fortified villages of New Guinea, but we still lack a good description of them. Haddon's statement concerning the upward sloping stages secured to the upper part of the stockades of fortified places of New Guinea is of interest, for such stages formed a marked feature of our *pa maori* of New Zealand.

Micronesia and Indonesia.

According to Christian the natives of Ponape, Caroline Group, were no mean proficients in fortification and the art of war. A fortified post attacked by the Spanish in 1890 had a stockade 680 yds. long, 11 ft. high, and 1 ft. in thickness.

Christian also mentions old stone walled forts in the Caroline Group, and describes one such ancient native fortress on a hill top that seems to have been terraced.

Nicholas remarks on the similarity of Maori and Battak customs, etc., and says, in writing of these Batta or Battak folk of Sumatra:—"In the fortified villages of these people, we see almost an exact description of the New Zealand *pa.* Constructed like the latter upon elevated ground, they are fortified with large ramparts of earth planted with brushwood; and outside these ramparts, or mounds, is a ditch, on each side of which rises a high palisade of timber." The subject of the origin of the *pa maori,* and as to whether or not the knowledge of its construction was introduced from other lands is one that needs close investigation.

During the Vedic age in India villages were protected by stockades and earthworks.

Some of the tribes of Borneo protected their communal houses by means of stockades. These defences consisted of a double row of palisades. Ling Roth tells us that, "Many of the poles of which it consists are ironwood, sometimes 30 ft. high, with rough carvings, representing disfigured [grotesque] human faces with long tongues, also monstrous animals, usually in the form of crocodiles, in order to frighten as it were the attacking foe." He also mentions a stage or elevated platform inside the stockades, from which an attacking force was harassed.

For purposes of comparison the following description of an American *pa* is given. Indeed it would be possible to collect accounts of primitive forts resembling the *pa maori* from many countries, including England and Ireland.

The fortified villages of the Hurons of Canada must have resembled to some extent a Maori *pa*. The following account of the former is taken from the Annual Archæological Report of Ontario for 1911:—"A situation was chosen favourable to defence, the bank of a lake, the crown of a difficult hill, or a high point of land in the fork of confluent rivers. A ditch, several feet deep, was dug around the village, and the earth thrown up on the inside. Trees were then felled by an alternative process of burning and hacking the burnt part with stone hatchets, and by similar means were cut into lengths to form palisades. These were planted on the embankment, in one, two or three concentric rows—those of each row inclining towards those of the other rows until they intersected. The whole was lined within, to the height of a man, with heavy sheets of bark; and at the top, where the palisades crossed, was a gallery of timber for the defenders, together with wooden gutters by which streams of water could be poured down on fires kindled by the enemy. Magazines of stones, and rude ladders for mounting the rampart completed the provision for defence.

"The forts of the Iroquois were stronger and more elaborate than those of the Hurons; and to this day large districts in New York are marked with frequent remains of their ditches and embankments."

In no other part of the Pacific east of the Asiatic Archipelago does the fortified village seem to have obtained to the extent that it did in the North Island of New Zealand. Throughout Polynesia we hear of strongholds, retreats and certain fortified places having been used during times of unusual disturbance, or as refuges, but the natives do not appear to have lived in such places in the more or less permanent manner that the Maori did, save possibly in the little island of Rapa. Of the different forms of forts used in Polynesian groups, those of Tonga most closely resembled the *pa maori,* and the Tongans seem to have borrowed the art of fort construction from the Fijians, even as they came to use the Fijian style of canoe.

In Fiji we find a Melanesian folk who appear to have constructed hill forts defended by ramparts, fosses, stockades and fighting stages, as on Viti-levu, while they also utilised another form with wet moats on low lying land. Further details regarding these fortified villages, and as to their being permanently occupied, or otherwise, are much wanted. In various groups and isles from the Philippines eastward to the island limits at the Hawaiian, Marquesas and Society Groups, we come across, at intervals, some form of defensive works in stone, earth or timber, but in no place was the art carried to such an extreme as in New Zealand, in no other group do such works seem to have been of so elaborate a nature, or so extensively used and occupied. In fact they were not a common usage in those groups, so far as we have learned, not even in Tonga. The Fijians, on the other hand, appear to have lived in such places, which are said to have been numerous on Viti-levu, and this was the custom in New Zealand. But such fortified villages do not appear to have been common on other isles of the Fijian Group.

Thus, in seeking the prototype of the Maori system of fortification we find practically nothing in all the vast area of Polynesia, comprising the central and eastern Pacific, that arrests the attention as closely resembling the *pa maori* except at the Tongan Group, and there it seems to have been introduced. The defences of the hill forts of Fiji in the Melanesian area most certainly seem to have resembled those of New Zealand forts.

In the North Island of New Zealand the custom of living in fortified villages was practically universal. In times of peace the people might live outside their fort, as when working at their crops, or engaged in collecting food supplies, but the *pa* was there as a refuge in case of danger.

Why this system of strong defences for villages should have been followed so much in New Zealand, may, perhaps, be accounted for by the fact that fighting was of commoner occurrence

here than in other groups, or for the reason that many tribes meant many enemies. At the same time, this living in fortified villages may have been inherited from the original inhabitants of New Zealand, a people of whom we know practically nothing.

This latter is a subject of much interest. The first inhabitants of New Zealand, of whom some description has been preserved in tradition, seem to have been much unlike the Maori in appearance, and in many of their habits, though speaking a tongue akin to Maori. It may, or may not, have contained sounds not known in the Maori speech; the few words of the language that have been preserved, as also place names, would naturally be altered by the Maori from Eastern Polynesia to suit his own phonetic methods. Whoever the original people, known to the later immigrants and in tradition as Maruiwi and Mouriuri may have been, they seem to have much resembled Melanesians in appearance, and it is quite possible that they were a mixed people from the Western Pacific. This subject we will not pursue, but merely try to answer the question that naturally presents itself to the mind—Did the old time aboriginal folk live in, or utilise fortified places? In answering this query we have but oral tradition to rely upon. Such tradition states that the original people of this island, a folk possessing somewhat unattractive features and dark skin colour, did construct fortified places. These traditions have been condensed by Mr. W. H. Skinner into the following passage:—

"The fortified *pa* seems to have been a very ancient institution in New Zealand, and especially on the Taranaki coast. We learn from reliable tradition that the original inhabitants of the country, who were found in occupation on the arrival of Toi from Eastern Polynesia about the middle of the twelfth century, were in the habit of building fortified *pa;* indeed, they seem to have introduced the fashion and put it in practice soon after their arrival on this coast. This ancient people, who came, no doubt, from the Western Pacific, are said to have first made the land at or near Nga Motu (The Sugar Loaf islets), and made their first settlement in the neighbourhood of the Urenui river. They are accredited with the building of the following old *pa,* which are still in good preservation, having no doubt been kept in repair until their abandonment in the early years of the nineteenth century: Maru-wehi, Poho-kura, Okoki, and others, all on the banks of the Urenui river."

The immigrants from Eastern Polynesia who arrived in New Zealand nearly thirty generations ago, inter-married with these aborigines, and certainly continued the custom of fort building. Their principal chief Toi, surnamed the Wood Eater, is said to have lived in the old earthwork fort at Whakatane known as Ka-pu-te-rangi. The Tawhiti-nui *pa* at Opotiki, where skeletons were found at the bases of the stockade posts, and Owhara *pa* at Maketu, the earthworks of which enclose nearly seven acres of land, are also said in tradition to have been constructed by this mixed race.

We know that from about thirty down to about eighteen generations ago there was a considerable amount of intercourse between New Zealand and the Pacific Isles. Even if the original inhabitants were not fort builders, that intercourse opens a channel for the introduction of the usage. It probably did not originate here.

Whatever the origin of the *pa maori* may have been, it seems fairly clear that such fortified villages were constructed by the natives of New Zealand from very early times, and that the Maori was a master of the art of fortification by means of rampart and fosse, scarp and stockade. Also that he adapted his methods to meet changed conditions resulting from the acquisition of firearms with celerity and success; the result being positions that were more easily defended than were our redoubts, superior in plan and execution.

The origin of the *pa maori* is a fair field for enquiry, while the study of the many remains of old hill forts might well appeal to those interested in a highly remarkable race.

List of Terms Denoting Features of the Pa Maori.

The terminology of the *pa maori* seems to have been fairly copious, although it has not been fully collected. In this connection Maning, author of *Old New Zealand,* says:—"I have been much surprised to find that a native can, in terms well understood, and without any hesitation, give a description of a fortification of a very complicated and scientific kind, having set technical terms for every part of the whole,—curtain, bastion, trench, hollow way, traverse, outworks, citadel, etc., etc., being all well known Maori words, which everybody knows the full meaning of."

Although lists of words or names are about the dreariest things that one can introduce into a paper, yet I propose to insert here a list of such terms as were applied to the different parts of a fortified village in former times, or rather such as have been collected, mostly by other writers, a few by myself:—

Ahurewa	..	An elevated platform in a *pa,* occupied by watchman.
Ahuriri	..	A low barrier across entrance to a *pa,* over which persons stepped when passing through the gateway.
Aparua	..	The two outer defences, comprising an upright stockade and an outer elevated screen, latter sometimes oblique. See *taia.*
Ara kutoro	..	A subterranean passage under a rampart.
Ara piwai	..	Small minor entrances. See *ngutuihe.*
Araroa	..	Lane-like entrance passage, stockaded.
Ara whakatara	..	A zigzag, lane-like entrance passage.
Awamate	..	A fosse outside outermost stockade.
Awarua	..	A fosse between two stockades. An inner fosse.
Awhikiri	..	Innermost stockade of a *pa.* See *kiri-tangata.*
Himu	..	Stockade posts.
Huahua	..	Rails of a stockade. Syn. *huapae, paehua, roau.* See *kawiti.*
Huka	..	Top of a rampart. ? Taranaki.
Hukahuka	..	Second stockade of a fort.
Kahekoheko	..	A stage projecting outward over a stockade, slanting upward.
Kahia	..	Grotesque human figure carved on stockade posts.
Kahupapa	..	A form of tortoise to cover sappers. R. Taylor.
Kaikirikiri	..	Second stockade of a *pa.* Capt. G. Mair.
Kakerangi	..	Elevated platform in a fort.
Karewa	..	Elevated outer stockade screen, or *pekerangi.*
Kātua	..	Main stockade. Syn. *matua.*
Kauae	..	Curtain of a *pa.*
Kaungaroa	..	Side stockade of a *pa.*
Kāwāwā	..	Palisades of a stockade. Syn *wawa.*
Kawiti	..	Uppermost rail of a stockade.
Kereteki	..	Elevated outer screen stockade. Syn. *teki, pekerangi.*
Kiri-kaiahi	..	Innermost stockade. Syn. *awhi-kiri, kiri-tangata.*
Kiritai	..	The space immediately outside the outermost stockade.
Kiri-tangata	..	The innermost stockade. See *kiri-kaiahi, parakiri.*
Koau māro	..	Oblique outer stockade. See *matahao.*
Koke	..	? Fosse inside innermost stockade. Rotorua.

Koki ..	Flanking angle. Bastion. See *pukoro.*
Kokoti ..	A traverse. Syn. *niho, pakiaka.*
Kopani ..	Earthen mound or timber stage to command a besieged *pa.*
Kopekope ..	Thick layer of green *Phormium* leaves lashed to stockades.
Koperu ..	? Rampart constructed of stones and clay.
Koropi ..	? Bars used in blocking gateway.
Koruarua ..	A trench. A rifle pit. See *parepare.*
Kotaretare ..	Syn. *kahekoheko, whakaarero, whakatoro.*
Kotikoti. Taiepa kotikoti ..	Subdividing fences in interior of a *pa.*
Koukou ..	The citadel or highest part of a fortified village.
Kowhanga ..	(A nest). Term applied to a fortified village.
Kuwaha ..	Gateway. Entrance. See *waha ngutu, waha tieke.*
Maioro ..	A rampart of earth. A fosse.
Maioro pekerangi ..	A high rampart.
Maioro maru ..	A low rampart.
Manioro ..	Syn. *maioro.* Whanganui.
Marae ..	The plaza or open space of a village. Also the open space in front of a hut.
Matahao ..	Oblique outer stockade, leaning outward. See *koau maro.*
Matua, Tuwatawata matua	Main stockade.
Ngerengere ..	Stockaded flanking angle, with sometimes an elevated platform.
Ngutu ..	Entrance. Narrow entrance passage, often outside gateway and formed by erecting a stockade or rampart parallel with outer defence of *pa.*
Ngutuihe ..	Small minor entrances. See *ara piwai.*
Niho ..	A traverse. Syn. *kokoti, pakiaka.*
Pa ..	A fortified village.
Pa huri ..	A barricade of felled trees.
Pa maori ..	A native village, fortified.
Pa taua ..	A fortified, defensive place.
Pa maioro ..	A place defended by earthworks.
Pa tuwatawata ..	A place defended by means of stockades.
Pa tahora ..	An outlying fortified place of minor importance.
Pa punanga ..	A place of refuge for non-combatants, etc.
Pa whakairo ..	A first-class fortified village, having carved posts, etc.
Paehua ..	Rails of stockade.
Pae-kawau ..	Part of the gateway of a *pa.*
Paekiri ..	Syn. *kiritai.*
Paetakū ..	Sill of gateway.
Pairi ..	Elevated palisades of outer stockade.
Pakaiahi ..	Ramparts. Earthworks.
Pakiaka ..	Traverses.
Pakorikori ..	Small position with inferior stockade, as at a cultivation ground.
Papatu ..	Protective bulwark on a fighting stage.
Parākiri ..	Innermost stockade.
Parehua ..	Terrace of a scarped hill. Syn. *tuku, upanepane, rengarenga.*
Parepare ..	Small earthwork. Rifle pit. See *koruarua.*
Parepare kokoti ..	Interior sub-dividing earthworks.
Parihi ..	? Syn. *koperu.*
Pekerangi ..	Outer elevated screen palisading. (2) Elevated platform. See *aparua, kereteki, teki.*

Piwatawata .. Syn. *tuwatawata.*
Pou matua .. Main posts of stockade. See *himu, tukuwaru.*
Pourangi .. Elevated platform. See *puwhara, taumaihi.*
Pourewa .. Elevated platform.
Pou take .. Main posts of stockade. See *pou matua, tumu.*
Pou tarewa .. Elevated platform. See *pourangi, tamarua.*
Pou toko .. Main posts of stockade. See *pou matua.*
Pou tokotu .. Main posts of stockade. See *whakawhenua.*
Pou turangi .. Main posts of stockade. See *whakaporo.*
Pou whakarae .. Main posts of stockade.
Pua kainga .. Syn. *ahuriri.*
Puhara .. Elevated stage for defenders. See *pourangi.*
Puwhara .. „ „ „ „
Pukoro .. Flanking angle. Bastion. Extension of defences to include a spring, etc., or cover an entrance.
Punanga .. Syn. *pa punanga.*
Raihe .. Stockade. Properly a fence of upright palisades or stakes secured to a rail; applied to any such fence.
Rangi .. Any erection used in attacking a *pa.* (2) A tortoise or testudo to cover sappers, etc. See *taiki.*
Rengarenga .. Terraces of a scarped hill. Te Arawa.
Riuroa .. Main entrance passage or lane of a *pa,* inside the defences. Syn. *araroa, waharoa.*
Riuroa mataiti .. Subsidiary fenced lanes giving access to interior.
Roau .. Rails of stockade. See *huahua.*
Tahitahi .. Glacis.
Taiā .. Outer stockade. See *tata, wita, matahao.*
Taiepa kotikoti .. Sub-dividing fences in interior of *pa.*
Taiki .. Wattled wickerwork tortoise. Syn. *rangi.*
Taitai .. ? Narrow space between stockade and rampart.
Take .. Syn. *pou take.*
Takurua .. A covering defence or ravelin to protect entrance.
Tamarua .. Secondary posts of stockade.
Tātā .. Outer stockade. See *taia, wita, aparua.*
Taumaihi .. Elevated platform or earth mound. See *pourangi.*
Teki .. Outer elevated screen palisading. See *aparua, kereteki, pekerangi.*
Tiaroa .. Syn. *riuroa, waharoa.* (2) Curtain of a *pa.*
Tihi .. Syn. *koukou, toi.*
Tiwatawata .. Syn. *piwatawata, tuwatawata.*
Toi .. Syn. *tihi.* Uppermost part of a hill fort.
Tokotu .. Upright form of elevated outer stockade.
Tuku .. Terrace of a scarped hill fort. See *parehua.*
Tukumaru .. Main posts of stockade. See *pou.*
Tukuwaru .. Main posts of stockade. (2) Secondary posts in some districts.
Tumu .. Stockade posts. See under *pou.*
Tuwatawata .. Syn. *tiwatawata.* Generic term for stockades. (2) Main stockade in some districts. See *wawa.*
Upanepane .. Terraces of a scarped hill. See *parehua.*
Waha ngutu .. Entrance, gateway.
Waharoa .. Syn. *riuroa, araroa.*
Waha tieke .. Inner end of *waharoa.*

Wana. Wanawana	..	Palisades of a stockade.
Wawa	..	Stockade. (2) Palisade or stake of a stockade.
Whakaarero	..	Syn. *kotaretare.*
Whakaawarua	..	Fosse inside stockade. See *awarua.*
Whakakoki.	..	Re-entering angle in rampart.
Whakaporo	..	Secondary round-headed posts of stockade.
Whakarua-kotare	..	Loopholes in stockade for musketry.
Whakatoro	..	Syn. *kotaretare.*
Whakawhenua	..	Main posts of stockade.
Wītā	..	Stockade inside the *pekerangi.* Williams, W.B. Ngati-Porou seem to apply this term to the elevated outer palisading.

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NOTE.—Fig. 112 represents the pa of the 'sixties' at Matata, not Maketu.

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